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PATTERNS OF GRADE TEN STUDENT INFORMATION SEEKING BEHAVIOUR

by

BARBARA A. HALL

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

DEPARTMENT OF ELEMENTARY EDUCATION

EDMONTON, ALBERTA

SPRING 1986

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(Supervisor)

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Date: November 28, 1985

ABSTRACT

This study describes the current information use and patterns of information seeking behaviour of grade ten students in the preparation of assigned research papers for core curriculum courses.

Data were collected from four major sources: (1) student bibliographies attached to research papers, (2) student questionnaires, (3) teacher questionnaires, and (4) teacher-librarian interviews.

Bibliometric methods were used to analyze the nature and currency of materials cited by students in their bibliographies. Survey interview techniques were used to investigate conditions that may have influenced student use in a specific learning environment and to provide additional information for a description of student information seeking behaviour.

Ten teachers from eight urban and rural secondary schools volunteered to take part in the study. They provided 224 student bibliographies from research assignments given in thirteen grade ten Social Studies, Science, English, and Consumer Education classes. This sample represented 16 per cent of the total grade ten student population enrolled in the core curriculum courses of the eleven secondary schools in the Prince George School District during the 1983-1984 academic year.

The measurement of the use of library services and programs resulted in a description of the what, how and where patterns of user behaviour. The most outstanding pattern to emerge from this description was the influence of professional guidance on student performance. Student use was more affected by the goals and objectives of the teacher and/or the teacher-librarian than by the accessibility or availability of materials from any facility.

ACKNOWLEDGEMENTS

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"If you do not know
where you are going
any road will get you there."

Talmud

CHAPTER 1

THE PROBLEM

Introduction

Teacher-librarians need to establish a conceptual framework for setting priorities and goals for the improvement of the instructional process. They should construct some kind of roadmap to face "the challenge of teaching an increasing variety of skills and concepts to students whose abilities and interests are wide-ranging and....transform their role from that of passive supporters of the curriculum to active partners in the planning and execution of the school's educational program" (B.C. Ministry of Education, 1978, p. 1).

Library programs should be developed which include the information skills now becoming necessary for living in a sophisticated age of technological and social change. To prepare for the new information society described in Naisbitt's Megatrends (1984), students should be taught survival skills in information retrieval and management. Only then will the school media program become "an

instructional force for excellence" as Davies (1980) envisions:

> The launching pad for learning takeoff (which) will provide not only the fuel to power the thrust for learning but also the flight plan, and then provide the needed expertise in readjusting the flight plan to accommodate unexpected adventurous flights of fancy. (p.32)

The final destination of school library planning should be effective programs and services which meet the demands of the users. In order to reach this destination, some evaluation should be made not only of the library's potential for service but of its present role in the total information seeking behaviour of students.

By identifying current patterns of student information seeking behaviour, the teacher-librarian and the classroom teacher can begin to predict the future needs of the learner. By assessing the present behaviour of the school library's clientele, they can begin to plan more effective school library policies and programs.

The purpose of evaluation is "to measure the effects or outcomes of a program against the goals it set out to accomplish as a means of contributing to subsequent decision making about the program and improving future programming" (Weiss, 1972, p. 4). School librarians should measure how far they have come in reaching the goal of providing students with the necessary skills to survive in an information society and planning should be adjusted to help improve these skills. Measurement of performance

focused on user demands "goes hand in hand with performance goals, performance specifications and the planning process" (Daniel, 1976, p. 5).

Current budget restraints and the public pressure for accountability increase the need for performance measurement and the need for more objective management and planning decisions. The issue is no longer whether to evaluate but how evaluation may enlighten the policy process (DeProspo & Altman, 1973, p. 3605).

Purpose of Study

The purpose of this study was to describe current patterns of student information use and student information seeking behaviour. The references included in the bibliographies of grade ten student research papers were analyzed by bibliometric techniques to determine student citing patterns. Teacher-librarian interviews and student and teacher questionnaires were used to provide more background on student use in order to create a total picture of student information seeking behaviour.

By looking at the patterns of information seeking behaviour investigated in this study, teacher-librarians and classroom teachers should have a firmer foundation on which to build school media programs that will provide the fuel to launch their students onto the road of informational literacy.

Research Questions

The study was designed to provide answers to the following questions:

1. What patterns of student information use and information seeking behaviour can be described from a bibliometric analysis of the materials cited by grade ten students in the bibliographies of their research papers?

1.1 What types of materials are cited?

1.2 How frequently are the same materials cited?

1.3 How up-to-date are the materials cited?

2. Where do students obtain the materials included in the bibliographies?

3. How do factors such as indexing, accessibility and teacher and teacher-librarian influence affect the patterns of student information seeking behaviour?

4. Are the patterns of student information seeking behaviour identified in this investigation similar to the patterns of student information seeking behaviour described in the Drott, Mancall, Barber and Robinson (1980) report and the Wozny (1982) study?

5. What insights do these patterns of student information seeking behaviour reveal for school library collection management and the instructional program?

Limitations of the Study

1. The results of this study may only be generalizable to situations with equivalent collection resources, community facilities, staffing and teaching assignments.

2. The highly structured nature of the surveys used in the study place some restrictions on student and teacher responses and thus may limit conclusions made about typical student behaviour.

3. The study makes no attempt to assess the quality or effectiveness of teacher assignment but only examines the materials used by students for the assignments.

4. In quantitative research, all materials reported in the student bibliographies are treated as though they are of equal importance and of equal value. Equal quantitative weight is also given to both primary and secondary use of materials. This supports Gilbert's (1977) concept that all references are used, "as aids which increase a paper's power to persuade" (p. 120).

5. The results of this study do not determine how many or what specific materials a basic school library collection should have to support the core curriculum. They indicate only the degree to which the school library can support the research assignments given to students by teachers of the core curriculum.

6. The study does not attempt to define why students seek information but only investigates reported student information seeking behaviour.

Definition of Terms

For the purposes of this study, the following terms and definitions are used:

Bibliography:	A list of the materials consulted and cited by students in the writing of their research papers.
Bibliometrics:	Counting and analyzing the references to materials listed in the bibliographies of student research papers.
Citation:	Indication of material use as listed in the bibliographies of student research.
Information Seeking Behaviour:	The processes of how and from where information is obtained.
Material:	Any information used by students as recorded in the bibliographies of their research papers.
Reference:	Any entry in the student's bibliography citing the use of material.
Research Paper or Assignment:	Any task assigned to students by their teachers involving materials assumed to be available in school or community libraries.

Source of Information: The collections in school and community facilities that supplied the materials for students.

Use: All materials consulted by students.

User: The students to whom the research assignments were given.

Some distinction should also be made here between the terms "performance measurement" and "evaluation". Daniel (1976) gives the following definition:

> Performance measurement and evaluation are two large umbrella terms that are closely related, although not quite identical. Performance measurement is necessary for evaluation....there is no real purpose in measuring performance unless some form of evaluation is going to follow....Measurement involves the process of ascertaining the extent or quantity of something while evaluating refers to the process of determining its worth or value. (p.10)

Performance measurement then is a quantitative description of performance while evaluation refers to a more qualitative value judgement which is frequently based on the quantative measurement. This study measured the performance of grade ten students in a specific learning environment to establish certain kinds of typical behaviour. Comments on effective school library service and programs were then made from the evaluation of these patterns of information seeking behaviour.

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

This chapter presents a discussion of the relevent literature on library performance measurement and evaluation. This literature formed the theoretical framework on which the present study was based.

The specific topics dealt with in this chapter are: library evaluation and performance measurement, use and user studies, information seeking behaviour, school library evaluation and performance measurement, bibliometrics, and the Mancall and Drott model.

Library Evaluation and Performance Measurement

Over the past few years, several different techniques have been developed to quantitatively describe use, uses and users of the library. Bonn (1974) divided what he terms the "repetitious literature" of library evaluation studies into the following methodologies:

1. Compiling statistics on holdings, use and expenditures.
2. Checking collections against published authorized lists and standardized bibliographies.
3. Obtaining opinions from regular users.
4. Examining the collection directly.
5. Comparing the library with existing quantitative standards and norms.
6. Testing document delivery capability.
7. Noting the relative use of several libraries by a particular group.
(P. 267)

Each of these methodologies is inadequate as each is based on indirect measures of performance. Each only reflects the potential or anticipated use of the collection and does not directly describe the actual demands of the user. Altman (1980) observed in her summary of current library evaluation methods that most "measures indicate resources which the library has available--and describe in a gross way the library's capacity to perform--not performance itself". They are prescriptive measures of input, not measures that focus on outcomes; they "ignore evaluation by the people for whom the collection is built--the library's clientele" (p. 13). In outlining the achievements of performance measurement in the last twenty years, Lancaster (1977, 1983) also discussed the need for a closer look at user outputs in predicting any outcomes of information service. He challenged librarians to move away from "relatively gross, quantitative measures, suitable only for macroevalution" and move toward more diagnostic measures which look at the "microevalution of services" that "involves the identification of factors affecting the amount of use and degree of user satisfaction" (1977, p. 13).

Altman, Lancaster and other experts in the library evalution field have been influenced by evaluation models of market research and computer science systems as well as evaluation models of educational research such as

Stufflebeams's CIPP (context-input-process-product) design (Deprospo and Liesener, 1975, p.298).

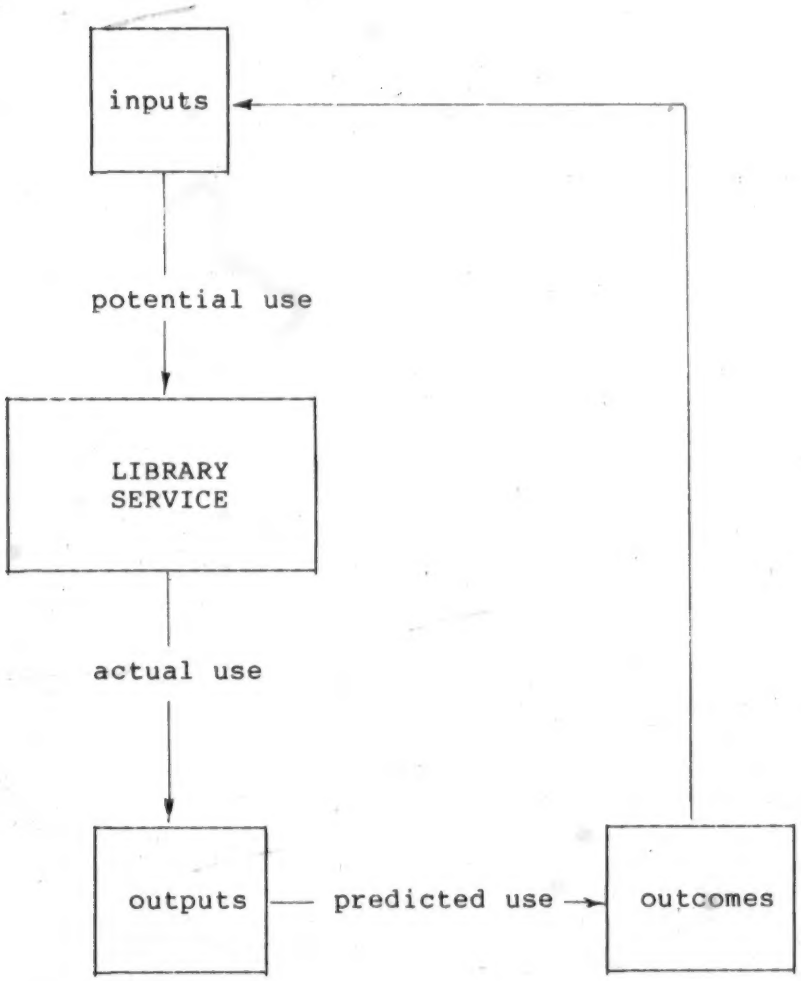
The flow chart in Figure 1 presents an illustration of the current thinking about the measurement and evaluation of the natural resources of library service (inputs) and the measurement and evaluation of productivity or the utilization of library service (outputs). Blazek (1981) discussed the contrast in this use of input and ouput measurement in more detail:

> Inputs are relatively simple to measure and represent the functional machinery of the system....its resources. Budget, personnel, collection and physical facilities can all be measured and readily compared to each other. They are often used as indicators of quality when judged by guidelines, standards and checklists. Outputs refer to the products or productivity of the system and....usually gauge the utilization of service: reference questions handled, books circulated, pages photocopied, classes oriented, interlibrary loans interlibrary loans completed, and students instructed.
> Performance goals of media centres are normally expressed in terms of these service outputs....The important point is that most libraries....end the process of inquiring here rather than explore the next logical stage, which is the impact on the user. (p. xii)

The user, then, must be given "star billing" to find out "how people make use of libraries" and how people "make use of the prime collateral of libraries--information" (Dervin, 1977, p. 17). Zweizig and Dervin (1977), in a review of public library evaluation studies, concluded that

Figure 1

Inputs and Outputs of Library Service



Adapted from Lancaster lecture, 1983

the question, "How much use is made of the library?", must be replaced in the immediate future by the question, "What uses are made of the library?" (p. 252).

Use and User Studies

Use and user studies form one of the most discussed research topics in the recent literature of librarianship. For detailed surveys and comprehensive bibliographical listings of these types of studies, Menzel (1966), Herner and Herner (1967), Paisley (1968), Allen (1969), Crane (1971), Martyn (1974), and Crawford (1978) in the Annual Review of Information Science and Technology may be consulted under the chapter heading "information needs and uses".

This attention in the research literature has prompted the Resources and Technical Division of the American Library Association to form a subcommittee on Use and User Studies. A document prepared by this committee (Christiansen, Davis and Reed-Scott, 1983) outlines the advantages and disadvantages of the current methods being used in collection evaluation studies. They have divided the types of use and user studies into the following categories:

1. Circulation studies.
2. Surveys of user opinions.
3. Document delivery tests.

4. Shelf availability studies.

5. In-house use studies.

6. Citation studies.

Although these methodologies study library output, many of them are still studies of the use of the collection rather than studies concentrating on the user. Broadus (1980) defined the difference in the two types of measurement:

> I define 'use studies' as those that start with a group of library materials, then try to determine what use, or how much use, they receive. A user study, on the other hand, begins with people and asks whether, or how much, they use library materials, and perhaps what kind of resources. (p. 317)

Libraries must focus on the user studies which describe the behaviour of the library's clientele if services and collections are to be adjusted to suit the user's demands or even to begin to anticipate the user's needs. Butler and Gratch (1982) have defined the purpose of conducting such user studies:

> In general terms, the purpose of a user study is similar to market research in business. It is an attempt to discover patterns of use and levels of awareness of users toward library services, to determine success or nonsuccess of services, and to identify what adjustments are needed in service strategy. (p. 322)

Burns (1978) stated that the ultimate goal of any user study is "the discovery, articulation, understanding, influencing, and, when appropriate, the elimination or at least minimization of those obstacles between a user and his information goals" (p. 6).

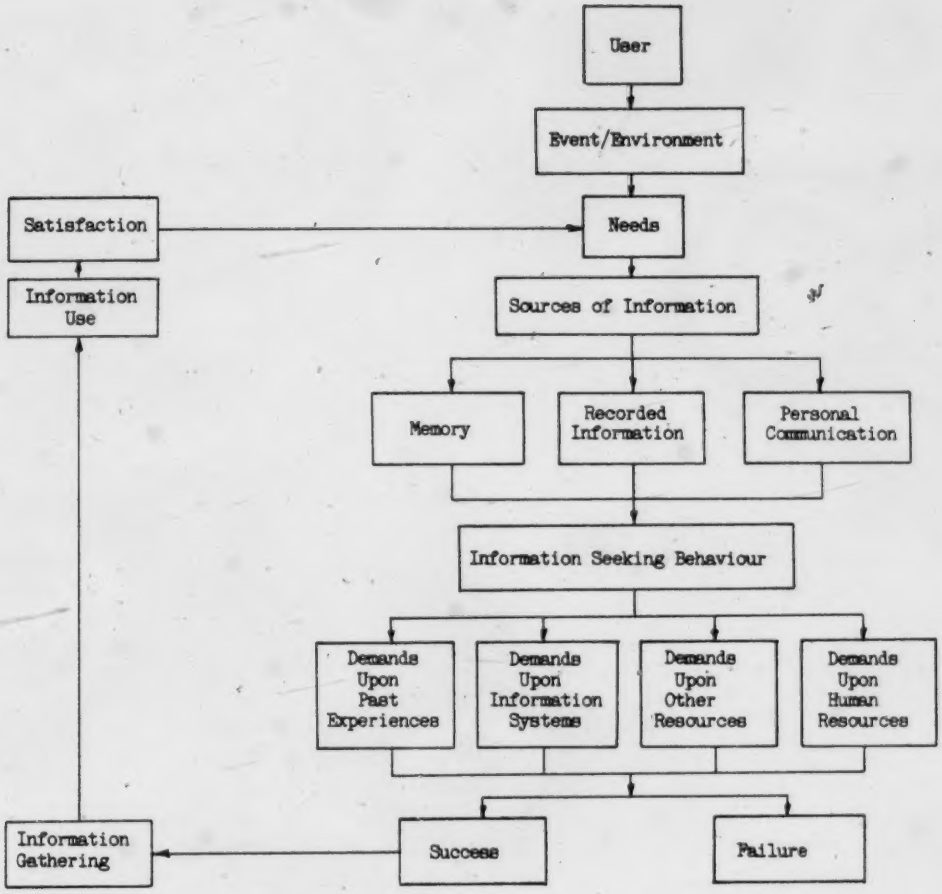
Information Seeking Behaviour

An emphasis on user studies in recent years has prompted some discussion of the whole concept of information seeking behaviour. Several studies have been done that have looked at the behaviour exhibited by academic scientists as information users and community demographic profiles have been undertaken in the public library field. Librarians have borrowed from models of communication research and psychological decision making theory to help formulate concepts of user behaviour. Still, much of the research has focused on "the means by which people discover information....rather than upon the ends served by the information seeking behaviour" (Wilson, 1981, p. 10). This concentration on means has resulted in the researcher looking at how people ought to be seeking information instead of looking at the actual demands that people make in order to satisfy their own perceived needs. There must be a shift in the researcher's focus away from the examination of a specific source or system to the exploration of the role of information in the user's everyday life. The researcher must become more aware of the environment in which the user functions in order to anticipate the user's future needs and adjusts programs and services to benefit the user.

A view of the concept of studying information use and behaviour is presented in Figure 2. The figure is adapted from White's (1981) figure on "interrelationships among

Figure 2

Information Seeking Behaviour



Adapted from White, 1981, p. 4 and Krikelas, 1983, p.17

areas in the field of user studies" (p. 4) and Krikelas's (1983) figure on "information seeking behaviour" (p. 17).

This figure does not make any attempt to create a model for information seeking behaviour but tries to illustrate some of the relationships between use, uses and user behaviour. The figure suggests that the user must perceive some kind of need which will result in a search for information from a variety of sources. The user tries to satisfy this need by the behaviour exhibited in making demands on the informational sources. "The choice of which source to use often depends upon the availability of material, convenience of access, and user awareness and familiarity with it" (Hodowanec, 1979, p. 228).

In studies of adult patterns of information seeking, Parker and Paisley (1966) and Warner (1973) found that two important factors influenced the user's choice of information source: (1) the user's information environment, and (2) the information providers. Warner (1973) and Chen and Hernon (1982) also found that one striking pattern occurred in the choice of the information provider. Most respondents in their studies tended to use interpersonal providers of information over institutional and mass media channels. Chen and Hernon (1982) reported that respondents used this oral source of communication in resolving their need because it was open, unstructured and readily accessible even though the interpersonal provider was not parti-

cularly qualified and not specifically suited to their information purposes (p. 63).

If information from any source is found that will satisfy the user's perceived need, then that information will be used, "if only in the sense of being evaluated to discover its relationship to the user's need" (Wilson, 1981, p.5). Thus, information seeking behaviour as defined by Krikelas (1983) is "an activity of an individual that is undertaken to identify a message that satisfies a perceived need" (p.6). He also states that: "information seeking begins when someone perceives that the current state of possessed knowledge is less than needed to deal with some issue (or problem). The process ends when that perception no longer exists" (p.7).

This concept of the information seeker fulfilling a perceived need or information purpose has implications for both library research and practice. As Derr (1983) states: "if researchers are to determine the information needs of typical users of information systems, they first must identify the latter's information purposes and then determine what information contributes to the achievement of those purposes" (p.276). Then, information systems must be designed to help the user within a particular environment make relevant decisions to solve a perceived problem. As Rouse and Rouse (1984) state: "The overall perspective of human information seeking includes a recognition that information seeking is seldom an end in itself, but instead

is part of the processes of decision making and problem solving" (p.135).

School Library Evaluation and Performance Measurement

Although the literature of academic and public library evaluation and performance measurement is extensive, this is not so true in regard to school libraries. A collection of some of the current literature that is available can be found in Blazek (1981) and Daniel (1976). Freeman (1976) may be consulted for a listing of past research in the field.

Performance measurement in the school library field has concentrated on the use of inventories and checklists (Daniel, 1976). Typical examples of this type of research are: (1) Liesner's (1976) inventory of school media services and cost accounting techniques and (2) Loertscher and Stroud's (1976) development of the Purdue Self-Evaluation System. An outline of other major instruments and techniques that have been used in school library evaluation research are found in the workshop handbook of Woolls, Loertscher and Shirey (1977).

In reviewing the research mentioned above, there is a great deal of information to be gained about the inputs to the collection building process. School library programs can also be compared to what those considered in the field to be "experts" have described as good user services. There is very little evidence, however, of the measurement of outputs or what might be called user studies. As

Mancall (1982) explained in her review of current school library measurement and evaluation:

> Research is needed in the area that Lancaster terms studies of use and Altman categorizes as collection outcome measures. There is a real need to push beyond passive comparisons of collections with theoretical descriptions of what experts 'think' should be included and work on the more difficult measurement problems of 'actual' response of the collection to use factors. (p. 188)

To accept Mancall's challenge, observation of student information use must go beyond the walls of the school library to the student's wider learning environment. In this context, the teacher-librarian can begin to assess actual student information use and information seeking behaviour rather than having to rely on pre-existing concepts of how students ought to be using and seeking information. In observing and describing the behaviour of its users, some characteristic patterns of use can be developed and library programs and services can be adjusted to more effectively fulfill the user's requirements.

Bibliometrics

Use and uses of information can be determined in part by studying the written products or artifacts of the user. This form of document analysis is an unobtrusive measure that can provide quantifiable data about information resources and user behaviour. The written products are the physical traces or running record as described by Webb,

Campbell, Schwartz and Sechrest (1966) which are left behind after information has been used.

A methodology which was developed to study sophisticated scholarly citations, bibliometrics, can form the basis for this analysis of information use. Bibliometrics as defined by Pritchard (1969) is "the application of mathematics and statistical methods to books and other media of communication" (p. 349). The first studies to conduct statistical analyses of bibliographies were undertaken by Cole and Earles (1917) and E. Wyndham Hulme (1923). Since that time, bibliometrics has been closely associated with the critical analyses of citation indexes, journal referencing in doctoral disserations, testing of scholarly eminence and structural qualities of subject literatures. The Fall 1978 issue of Collection Management and the Summer 1981 issue of Library Trends contain collections of well-documented and critical articles on the topic. Narin and Moll (1977) may be consulted for a review of the past research in this area.

Bibliometric techniques, however, can be applied to any listing of information utilized by library users. In their reviews of the theory, method and application of bibliometric studies and techniques, Broadus (1977), Moll (1978), Lawani (1981), and Smith (1981) mention the practical use of bibliographies as a source of historical quantitative information on use and user behaviour. Smith (1981) states that:

> Citations are signposts left behind after information has been utilized and as such provide data by which one can build pictures of user behaviour....Any set of documents containing reference lists can provide the raw material for citation analyses and citation counts based on a given set of documents are precise and objective. (p. 85)

Broadus(1977) says:

> One advantage of citations is that they are unobstrusive measures; counting them does not cause them to change. The general opinion is that, taken in large numbers, they can have considerable validity and reliability. Even critics who emphasize the limitations of citation analysis do not discount entirely their usefulness as indicators. (p. 309)

And Moll (1978) states that "information resulting from bibliometric analysis can provide documented objective evidence of library performance as contrasted with intuitive subjective evidence" (p. 196).

Although the practical applications of bibliometric techniques have been discussed in the research literature of library and information science, few studies have been undertaken below the graduate level. Stroud (1982) in her observations of research activity in the school library field stated that "citation analysis and operations research, much in evidence in library research in general, has received very limited use in the school library area" (p. 130).

However, one study by Tobias (1975) looked at the periodical references used by students in college freshman

English classes as a means of examining collection policies in an undergraduate library. In addition, two recent studies by Drott, Mancall, Barber and Robinson (1980) and Wozny (1982), have used bibliometric techniques to analyze high school student information use. A detailed description of this model appears in Mancall and Drott (1983).

This study has also demonstrated a practical application of the use of bibliometric techniques because the bibliographies of the research papers of grade ten high school students were analyzed to detect patterns of use and behaviour. The bibliographies were an unobtrusive way of looking at student information use.

Although bibliometric techniques present a relatively simple and objective way of collecting and analyzing data, statistical findings cannot stand alone. A collection of user data only becomes meaningful when it is placed in the context of the total relevant environment. In order to obtain more comprehensive information about the user's environment and the patterns of information use, questionnaires and interviews should accompany bibliometric analysis. Smith (1981) remarks:

> Another way to strengthen studies using citation analysis is to apply multiple methods in the study of a phenomenon ....As no research method is without bias, citation analysis should be supplemented by methods testing the same variable but having different methodological weaknessess....One could supplement citation data with those obtained via interview or questionnaire. (p.99)

Wilson (1980) also supported this approach in his statement that researchers must "identify the context within which information needs investigations are carried out" (p. 5).

Mancall and Drott Model

As noted earlier, two studies have been undertaken which describe the behaviour of high school students as information users. The first was a large-scale study conducted by Drott, Mancall, Barber and Robinson (1980). A sample of 1,178 bibliographies from the research papers of high school students in grades nine through twelve were analyzed by the researchers in this study. The students were selected from fifteen high schools in five school districts within 100 miles of a major metropolitan area. Bibliometric methods were used to measure the nature and use of materials by the students. Three other methods of data collection were also used: a questionnaire survey of classroom teacher assignments; a questionnaire survey of student use of facilities; and an interview survey of teacher-librarians' user services and collection policies.

Although the Drott, Mancall, Barber and Robinson study was mainly descriptive in nature, the study did reveal that one of the most significant factors associated with the use of many libraries by students was access, both actual and perceived. This was true even though the students demonstrated the ability to locate information from a variety of different sources in the community. They also found that

students relied heavily on books for information and did not particularly use recent materials. They further suggested that both teacher influence and teacher-librarian influence seemed to have a greater impact on student use of materials than did any specific collection content in a given library.

The second study was a smaller follow-up investigation by Wonzy (1982). This study used the same methodology in describing the use of libraries and materials by 53 grade nine honours science students in independent study courses. Another variable was introduced into this study in that the students received training in on-line bibliographic searching. An addition to the methodology used in the first study was the linking of the type of reference used by each student to the type of library used by each student. This provided more information for a description of student behaviour. Wonzy also reported that the major influences on student use of information were the teacher and teacher-librarian.

Both studies were concerned with the use of libraries and information by many academically oriented students enrolled in independent study courses. While these studies have added to our understanding of high school student use of libraries and established some patterns of student information seeking behaviour, there are several limitations to their methodology and findings. These limitations are as follows:

1. Students selected for the studies were for the most part academically oriented. This may limit the research findings because they may not be generalizable to a more heterogeneous student population.

2. Many of the bibliographies analyzed were attached to the research papers of students enrolled in an independent study program. This may limit the findings because they may not be similar to bibliographies attached to the research papers of students enrolled in regular curricular programs.

3. Most students were given an unlimited choice of research topic. This may limit the findings because they may not be similar to situations in which there are assigned research topics. Topics chosen by students may require different uses of information and different information seeking strategies than topics assigned by the teacher as part of a regular program. The capacity of the school library to support a free choice of topics could differ from the capacity of the school library to support more curricular oriented topics.

4. There was no attempt made to link the student responses to the questionnaires with the topics chosen or the bibliographic references used in the writing of their research papers. This limited any comment or comparison on the type of materials used and the patterns of information seeking behaviour with the kinds of topics chosen. It also limited the comparison of student responses to question-

naires with the actual use of materials listed in their bibliographies.

5. The collection of a variety of different types of bibliographic formats required some interpretation as well as tedious coding procedures for the researchers.

6. The researchers did not report the results of the teacher questionnaires or the teacher-librarian interviews. This limited any attempt to compare or confirm the assumed environmental factors affecting student information use.

In order to build upon the findings of Drott (1980) and Wozny (1982), a study was proposed which would describe a more heterogeneous group of high school students where assignments were more directly related to a core curriculum. The study investigated student bibliographies in research papers which had been assigned by the teacher as a regular part of the program in the core subject areas of the curriculum. An adaptation of the methodology and bibliometric techniques outlined in Mancall and Drott (1983) formed the basic design of the study. However, more effort was made to link the use of types of materials with the type of library used and the specific topic assigned.

The investigation also compared the patterns of use and patterns of information seeking behaviour described in the Drott and Wozny studies with the patterns of use and patterns of information seeking behaviour displayed by students in completing assignments given by teachers of the core curriculum.

Stroud (1982), in her review of school library research methodology, noted the need for such replication and comparison:

> Throughout the relatively short research history in the library science field, critics have charged that the majority of the research is of the 'one-shot' variety....Many also continue to be carried out in isolation, a situation at least partially reflected in the overwhelming number of studies using original instrumentation, a situation that is not conducive to making comparisons.
> Research in the area of school libraries continues to be noncumulative and fragmentary. There is little or no indication of studies being replicated and only limited and spotty evidence of the efforts of one person building upon another. Until there is a significant increase in this type of activity, it appears unlikely that there will be a systematic build-up of a body of knowledge upon which the field can base its growth. (p.129, 131)

Summary

This study, then, was an attempt to develop a more systematic body of knowledge about the information seeking behaviour of students. By focusing on the findings of output measurement, teacher-librarians and classroom teachers may be better able to evaluate and develop instructional programs and library services which satisfy the present demands and even anticipate the future needs of their students.

CHAPTER III

RESEARCH DESIGN

Introduction

Bibliometric and survey research techniques were utilized to describe student use of materials in research assignments. Patterns of student information use and student information seeking behaviour were determined by: (1) the bibliometric analysis of student bibliographies attached to research papers, and (2) the information provided from student questionnaires, teacher questionnaires and teacher-librarian interviews.

The quantitative data obtained from student bibliographies were counted and the results were recorded in statistical tables and graphs. Patterns of information seeking behaviour were inferred from the statistical data. Additional information provided by student questionnaires, teacher questionnaires and teacher-librarian interviews contributed to a more detailed description of these patterns of behaviour.

General conclusions about student searching behaviour and its significance to school library programs and services were drawn from a comparison of the results of this Canadian study with the results reported in the Drott, Mancall, Barber and Robinson (1980) and Wonzy (1982) studies.

Daniel (1976) supported this "building block concept" of measurement in her paper on performance measures for school libraries:

> Quantitative measurement starts with simple counting. Counting several different things and combining them in various ways is a simple step upward but a powerful step in terms of providing information. From counting individual items to estimating from small samples what the results would be if all the items were counted is another step in sophistication and power. Comparing the results of these measures with other measures provides information for making managerial decisions. It is with these tools of measurement that information is produced that can be used to answer questions such as how good a service is and how much good the service does. Measurement data require interpretation. Quantitative data of how much and how many mean nothing alone. Quality must be inferred from quantitative measures. (p. 7)

Instrumentation

The four types of measurement used in this study were adapted from bibliometric and survey research techniques used in the Drott, Mancall, Barber and Robinson (1980) and Wonzy (1982) studies. Basic methods and procedures of survey research as outlined in Best (1981) and Line (1982) were also consulted in the development of the questionnaires and interview schedule.

Student Bibliographies

Development

A "bibliographic format sheet" was designed to aid students in the reporting of the materials they utilized

in the writing of their research papers. (see Appendix A). After discussion with teacher and teacher-librarian colleagues, teacher instructions were drawn up to clarify for teachers the use of this form. (see Appendix A).

The standardized form was used to alleviate some of the tedious pre-coding procedures outlined in the Mancall and Drott (1983) guidebook on measuring student information use. The use of individual columns for data input reduced the amount of time spent by the researcher in the labelling of individual entries from a variety of bibliographic formats. Although the format sheet could have created a somewhat artificial environment for the student, it was believed that the ease of tabulation outweighed any disadvantage.

Content

The information listed on the bibliographic format sheets provided answers to the following questions:

1. How many materials were cited by the students in the writing of their research papers?

2. What type and variety of materials were cited by students?

3. How current were the materials cited by students?

4. From what source did the students obtain the materials?

5. Was there a relationship between the publication date of the materials cited and the type of materials cited?

6. Was there a relationship between the source of the materials cited and the type of materials cited?

7. Was there a relationship between the student citing of materials and the topic chosen?

The above collection of data helped to reveal overall patterns of student information use in the preparation of assigned research papers.

Student Questionnaire

Development

A short student questionnaire was developed to define and explore the extent of student use of materials. (see Appendix B). This questionnaire was administered by the classroom teacher at the end of each assignment after the student bibliographies were collected.

In the Drott, Mancall, Barber and Robinson (1980) study, the student questionnaire was administered by a member of the research team. As the researcher in this study was well known to the teachers in the Prince George school district, teacher anonymity was considered to be important to ensure truthfulness and was believed to out-weigh any advantages found in having the researcher present. Written teacher instructions were also felt to be an adequate replacement for any direct student contact. (see Appendix B).

Survey research closed-form questionnaire and critical incident techniques were used in the development of the student questionnaire. It was felt that students would

give a more accurate response to objective questions directly related to the specific research assignment they had just completed. The student anonymity stressed in both the teacher and student instructions further encouraged the students to give honest responses.

The students were, however, asked to note the topic written on at the top of each questionnaire. This helped to link the answers to a specific questionnaire with a specific bibliographic format sheet previously collected by the teacher.

The questionnaire was presented to colleagues in a university research course and was reviewed by a curriculum committee at the local school district level. Minor changes in wording and the decision to present completely closed questions resulted from this scrutiny.

The decision to use this type of closed checklist, answer-box design permitted quick student response and easy tabulation by the researcher. This design also clearly defined the data required and thus any variation in observation or attempt to give opinion would be controlled. Best (1981) supports the use of such a restricted questionnaire as "it is easy to fill out, takes little time, keeps the respondant on the subject, is relatively objective, and is fairly easy to tabulate and analyze" (p.169).

Content

The student questionnaire provided answers to the following questions:

1. What sources of information did the students attempt to use in their research even though they were not successful?

2. Was assistance from library personnel sought and received by students in any school or community library?

3. Did the students receive assistance from anyone other than library personnel in any school or community library?

4. Did the students use information from sources other than libraries?

This information supplemented and extended the researcher's understanding of the patterns of information seeking behaviour that were revealed in the bibliometric analysis of student bibliographic references.

Teacher Questionnaires

Development

A teacher questionnaire was developed to determine the teacher's role in the research assignment and to identify any effects of professional guidance and direction on student searching behaviour. (see Appendix C).

Survey research closed-form questionnnaire and critical incident techniques were again used in the development of this questionnaire. This limited the teacher's responses to the factual events related to a specific research assignment. It would help the teacher avoid the use of generalizations, and encourage accuracy in reporting.

The checklist box design of the student questionnaire was utilized in the teacher questionnaire. The statements "other", "please specify" and "none of the above" were added to each question to provide for any unanticipated responses. Teacher anonymity was stressed in the questionnaire instructions to further assure truthfulness.

This questionnaire was also reviewed by the curriculum committee at the local school district level. Some minor adjustments in the wording of several questions resulted from this review.

Content

The teacher questionnaire provided answers to the following questions:

1. Were the students restricted in the selection of their research topics?

2. Did the teacher suggest any use of libraries or any other sources of information?

3. Was there any teacher interaction and/or preplanning with librarians before the research assignment was given?

4. Did the students receive any instruction in library use?

5. Did any or all of the above have an effect on the student's searching behaviour?

This information was needed not only to extend the researcher's understanding of the patterns of student information seeking behaviour, but also to help the

researcher make some subjective comment on the effects of professional guidance on student performance.

Teacher-Librarian Interviews

Development

An interview with the teacher-librarian in charge of the library in each school used in the study was necessary to determine specific collection policies and media services. This provided the researcher with information on student accessibility to materials, instructional programs and other contextual parameters within which the students operated.

Interviews were used in order to elicit confidential information and to probe attitudes toward information use which the teacher-librarian may have been reluctant to put in writing.

Best (1981) outlines other advantages in the use of the interview technique:

> The interviewer can explain the purpose of the investigation, and can explain more clearly just what information he or she wants. If the subject misinterprets the question, the interviewer may follow it with a clarifying question. At the same time, he or she may evaluate the sincerity and insight of the interviewee. (p. 165)

The necessity of gaining a good rapport with the interviewees was reduced somewhat as the researcher knew many of those interviewed as fellow teacher-librarians in the Prince George School District. This kind of familiarity

may, however, have been a disadvantage as the respondents could exaggerate their relationship with teachers and students in an attempt to appear more creditable to a colleague. Thus, the interview format was highly structured to negate any bias and establish the neutrality of the interviewer.

The interview proceedings were guided by a previously constructed schedule. (see Appendix D). The schedule outlined an introduction to be read to each interviewee to establish and standardize the setting for the questions and discussion. (see Appendix D). Clarification probes were listed to aid the researcher in stimulating discussion and in encouraging the teacher-librarians to elaborate on their responses. The probes also ensured more control of the topic under discussion and ensured that the information gained from the interview was relevant to the researcher's objectives.

Gorden (1975) supports the use of this probing technique in a fixed schedule interview as it "is a way to motivate the respondent and steer him toward giving relevant, complete and clear responses to meet the objectives of the interview" (p.422).

The interviews were tape recorded to ensure a more complete and objective analysis of each situation at a later time.

Content

The teacher-librarian interview provided answers to the following questions:

1. What access did grade ten students have to the library in the school?

2. What selection policies were established to provide support for the grade ten core curriculum?

3. What assistance was given to teachers in the planning of research assignments?

4. What assistance was given to grade ten students with respect to research assignments?

5. What research skills were taught at the grade ten level?

6. Was there any interaction with other sources of information in the community?

This information was needed for an understanding of the environmental factors that may have affected the patterns of student information seeking behaviour.

Sampling

This study focused on grade ten students registered in the eleven secondary schools of the Prince George School District in September 1983. Grade ten students were selected for the study because all students in British Columbia at this grade level are required to take the same core courses in English, Social Studies, Science, Consumer Education, Mathematics and Physical Education. In the Prince George School District, grade ten students are grouped into these subject areas heterogeneously. It is

district policy to provide each school with an initial reference collection to support the core curriculum and to assign at least one qualified teacher-librarian to the resource centre of the school.

A stratified random sample of teachers was taken to represent all secondary schools in the district and all grade ten core curriculum courses that were most likely to require student research papers. After some discussion with district personnel, the core courses considered most likely to require student research papers were English, Social Studies, Science and Consumer Education. The sample was designed to include at least one teacher from each school and at least three classes in each of the four selected subject areas as illustrated in Figure 3.

The eleven secondary schools represented in Figure 3 included three junior secondary (8-10) and eight secondary (8-12) schools. The population in these schools ranged from the smallest rural school of approximately 160 students to the largest urban school of approximately 1500 students.

Participating teachers from each school were solicited on a volunteer basis and remained anonymous to the researcher. In this way, it was hoped that the research assignments given to the students would be a normal part of the classrroom routine and that the assignments would not be contaminated or influenced by any contact with the researcher.

Figure 3

Stratified Random Sample

English	Kelly Road	P.G.S.S.S.	Valemount
Social Studies	Duchess Park	John McInnis	McBride
Science	College Heights	Lakewood	D.P. Todd
Consumer Education	Blackburn	Kelly Road	MacKenzie

Ten teachers volunteered from eight of the eleven secondary schools contacted. These teachers represented seventy-five percent of the number of teachers asked to participate in the study and ten percent of the total number of grade ten teachers enrolling the four core curriculum classes in the district. The sample also represented two of the three rural schools in the district and six of the eight urban schools in the district. Two of the three junior secondary (8-10) schools in the district as well as six of the eight secondary (8-12) schools in the district were represented in the sample.

The ten teachers who volunteered to take part in the study supplied the researcher with 224 student bibliographies and questionnaires. This represented sixteen percent of the total grade ten student population (1422) in the district and included thirteen classes in four subject areas of the core curriculum. The bibliographic format sheets and questionnaires of the thirteen classes recorded were composed of: four Social Studies classes, two Science classes, five English classes and two Consumer Education classes.

Data Collection

Permission to conduct the study was obtained from the Prince George Superintendent of Schools after a careful review of the researcher's proposal by the District Advisory Committee on Research Projects. The Coordinator

of Curriculum Supervision was designated as the liaison between school staff and the researcher.

A memorandum was issued on September 8, 1983 from the Coordinator of Curriculum Supervision to all secondary school principals requesting their assistance in locating grade ten teachers to take part in the study. (see Appendix E).

By October 30, 1983 seven of the eleven schools contacted had come forward with the name of a teacher volunteer. On January 24, 1984 a further memorandum was sent out to the principals of the four remaining schools. (see Appendix E). A letter reminding the participants that they had volunteered to take part in the study was also issued on this date. (see Appendix E).

As the name of each teacher who had volunteered to take part in the study was submitted to the district coordinator, a package prepared by the researcher was sent out to the participant. The package contained 30 copies of the bibliographic format sheet and 30 copies of the student questionnaire accompanied by teacher instructions for the use of each. A covering letter from the reseacher thanking the volunteer and explaining the general nature of the study was enclosed. (see Appendix E). The teacher was given until March 31, 1984 to return the student materials.

When the completed bibliographies and student questionnaires were returned to the Coordinator by the participant, a teacher questionnaire was sent out. Another

covering letter from the researcher accompanied this questionnaire. (see Appendix E).

The district internal mailing system was used to distribute and collect all information. This system proved to be most efficient with respect to the cost to the researcher and convenience to the respondent.

Five class sets of completed bibliographies and questionnaires were received by April 4, 1984. On April 17, 1984 the researcher sent a letter to the remaining volunteers extending the deadline for the return of materials to June 10, 1984. (see Appendix E). This helped to accommodate teachers from several non-semestered schools in which student research papers were normally given towards the end of the school term. At this time, the researcher also personally contacted the principals of two schools which had still not come forward with the name of a volunteer.

By June 10, 1984, ten teachers from eight schools had returned thirteen completed sets of bibliographies and questionnaires. Only three of the eleven schools contacted did not participate in the study.

An interview was set up with the teacher-librarians in the city schools during June and September 1984. The interviews were conducted in the school libraries after school hours. The teacher-librarians in the two rural schools that were over 100 miles away from Prince George were interviewed by telephone as the researcher could not

be released from Duchess Park Secondary School to travel such distances.

Treatment of the Data

Student Bibliographies

The 224 student bibliographies were coded to help identify any relationship between any materials cited and the general subject area and the size and location of the school. This was a departure from the Mancall and Drott model (1983) in which student bibliographies were given only a simple control number to maintain student anonymity.

Both teachers and students remained anonymous to the researcher in this study. Subject and topic information were supplied by the students on the bibliographic format sheets and the location and size of school were supplied by the district coordinator. The information source of all materials was also given by the students on the bibliographic format sheets as in the Wozny (1982) study.

Each bibliographic format sheet was assigned a code number which included: student number, school size, rural or city location and core subject area. The 224 student format sheets were then individually recorded, paper by paper, on 14 columnar accounting pads under the following headings:

1. Student Code
2. Total References to all Materials
3. Total References to Books
4. Total References to Magazines

5. Total References to Encyclopedias
6. Total References to Newspaper Clippings
7. Total References to Pamphlet Material
8. Total References to Audio-Visual Material
9. Total References to Any Other Material
10. Publication Date of all Materials under 5 years old
11. Publication Date of all Materials over 5 years old
12. Most Recent Publication Date of any Materials Referenced
13. Oldest Publication Date of any Materials Referenced
14. Source of All Materials
15. Specific Topic Written On

Totals were tallied from each column and were used in the construction of tables and graphs as well as furnishing additional information for a description of student information seeking behaviour.

Student Questionnaires

The 224 student questionnaires were linked to the student bibliographic format sheets by giving each questionnaire a code number which included: size of school, urban/rural location and general subject area. The researcher was able to do this as each teacher returned the class sets of bibliographic format sheets and student questionnaires together in one package. This was a departure from the Mancall and Drott model (1983) in which student question-

naires were given only a simple control number and were not directly linked to the student bibliographies.

The students were also asked to note the topic written on at the top of each questionnaire. This was another way of linking the answers on the student questionnaire with the actual citing of materials on the bibliographic format sheets.

Teacher Questionnaires

The ten teacher questionnaires were also given a code number which included: size of school, urban/rural location and general subject area. Because the teacher's name was not known, the code number supplied the researcher with additional information on the influence of size, location and subject area on student information seeking behaviour.

Teacher-Librarian Interviews

Teacher-librarians in each of the eight schools that participated in the study were interviewed by the researcher after all bibliographies and questionnaires were received. With the permission of each interviewee, all sessions were recorded. In the urban interviews, all comments were tape recorded and verbatim transcripts made. The rural interviews were conducted by telephone and shorthand notes made of all conversations. The typed transcription of the teacher-librarian interviews provided the researcher with additional information on the student's specific learning environment.

Summary

Although the methodology and instrumentation used in this study replicates the methodology and instrumentation used in the Mancall and Drott model (1983), some mention should be made here of several differences.

In this study:

1. A more heterogeneous sampling of students was used.

2. The sampling was taken from schools in a Canadian environment.

3. All students surveyed were enrolled in core curriculum courses.

4. The teachers as well as the students were anonymous to the researcher.

5. A more restricted format was designed for the collection of student bibliographic information.

6. The student bibliographies and the student questionnaires were more directly linked to the topic and subject area and the size and location of the school.

7. The student bibliographies were linked with the student questionnaires.

8. The results of the teacher questionnaires and the teacher-librarian interviews were recorded and reported.

Bibliometric analysis and the questionnaire and interview techniques of survey research were used in this study to provide information for a description of grade ten student use of materials in fulfilling the requirements of assigned research papers. Patterns of information seeking behaviour displayed by the students in this specific learn-

ing environment were compared with the patterns of information seeking behaviour displayed by students in the Drott, Mancall, Barber and Robinson report (1980) and the Wozny (1982) study.

CHAPTER IV

DATA ANALYSIS

Introduction

The purpose of this chapter is to outline and discuss the results of the bibliometric analysis of student references and the responses from the student questionnaires, teacher questionnaires and teacher-librarian interviews.

The first part of the chapter presents descriptive statistics about the student bibliographies as illustrated in tables and graphs. Measures of central tendency, rank, and comparative percentages are reported. A description of current student information use is formulated from the analysis of this data.

The second section analyses the responses to the surveys conducted and expands upon the patterns of student information seeking behaviour described in the first section.

The final section is a general discussion and summary of the results obtained from all forms of measurement and includes a comparison of those results with the results reported in the studies by Drott, Mancall, Barber and Robinson (1980) and Wozny (1982).

Bibliometric Analysis of Student References

Ten teachers of thirteen classes in four core curriculum subject areas provided the student bibliographies

studied here. A total of 224 bibliographies were received from students in: five English classes, four Social Studies classes, two Science classes, and two Consumer Education classes. The average number of student bibliographies from each class was seventeen. The number of student bibliographies per class ranged from seven in one Consumer Education class to twenty-seven in one English class.

A total of 1096 references were cited in the 224 student bibliographies. Table 1 identifies the number of student bibliographies examined in each of the subject areas and the number of references cited.

Some comment can also be made here of the most frequently chosen topics in each subject area. In English classes, the most frequently chosen topics were: abortion, cults, euthanasia, capital punishment, drug abuse, child abuse and the effects of television. In Science classes, topics were frequently chosen from general assignments on earth science, genetics and animal reproduction. In Consumer Education classes, most topics centered around the development of industry in Canada and the effects of depressions. Social Studies classes tended to choose historical topics such as explorers and famous Canadian events and current topics such as federal and provincial industries and natural resources. All topics assigned by subject teachers were related to the content of the core curriculum.

Table 1

Student References by Subject Area

Subject Area	Number of Bibliographies (n = 224)	Number of References (n = 1096)
English	93	535
Social Studies	71	334
Science	36	131
Consumer Education	24	96

The above is a general description of the source documents from which the more specific findings outlined in the remainder of this chapter are derived.

Quantity of References Cited

Table 2 shows the frequency distribution of the number of references cited by each student in their bibliographies. The number of citations per student paper ranged from one reference cited by nine students to 31 references actually cited by one student! The mean number of references cited was 4.9. The median was 3.5.

The median here is probably the best description of typical student behaviour as it is not as influenced by the widely deviating scores. The frequency graph in Figure 4 illustrates the uneven distribution of cited materials. The distribution was skewed by a small number of students citing a large number of materials and the majority of students citing two to six items.

Types of Materials Cited

Table 3 shows that, although the students in general cited a wide variety of materials, the majority demonstrated a strong preference for books. Over half (588) of all references were to books. Over half of the students (124) cited encyclopedias accounting for one-quarter (241) of the total references. Fourteen percent of the students (67) cited magazines accounting for fourteen percent (152) of the total references.

Table 2

Frequency Distribution of References
Cited in Student Bibliographies
(n=224)

Number of References	Number of Student Papers	Percent of Student Papers
12+	10	4 %
11	2	1
10	5	2
9	2	1
8	7	3
7	15	7
6	26	12
5	32	14
4	40	18
3	50	22
2	26	12
1	9	4
Total	224	100 %

Figure 4

Frequency Distribution of References
Cited in Student Bibliographies

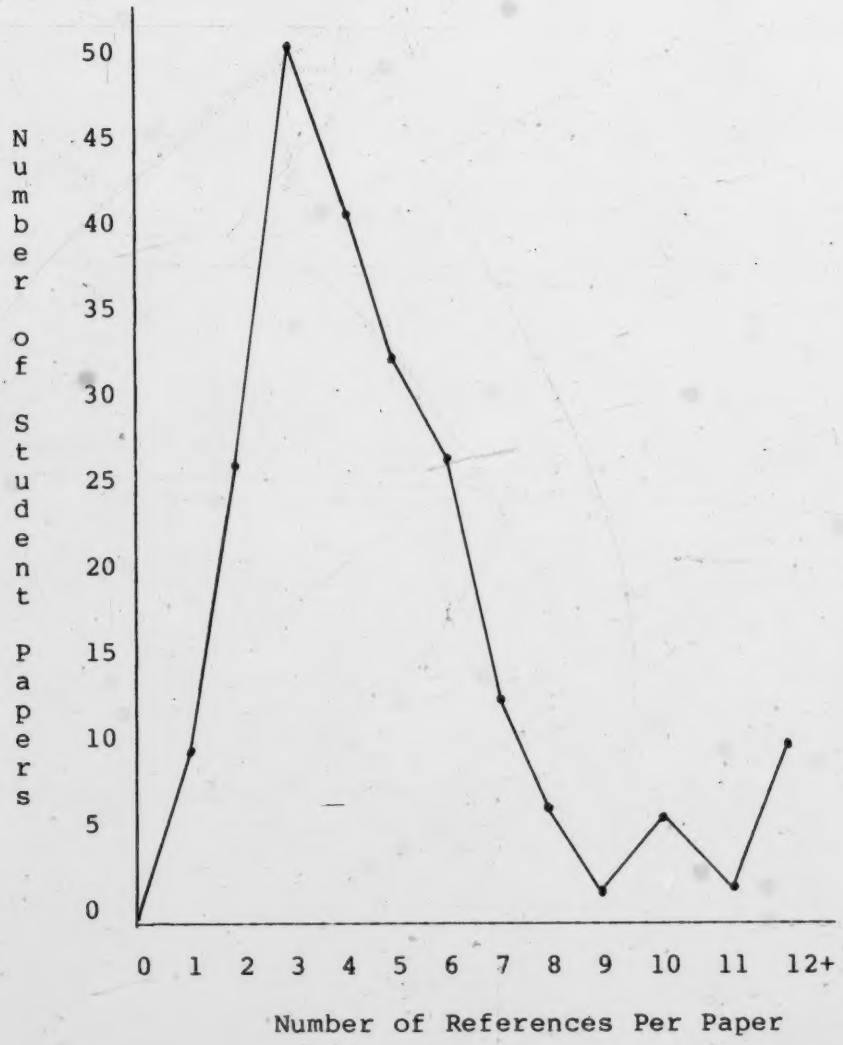


Table 3

Types of Materials Cited
In Student Bibliographies
(n = 1096)

Type of Material	Number of References	Percent of References
Books	588	54 %
Encyclopedias	241	22
Magazines	152	14
Pamphlets and Newspapers	96	8
Audio-Visual and Other	19	2
Total:	1096	100 %

Other general observations of the types of materials cited by students can be made from the size, location, topic and subject area coding of the student bibliographies. There seemed to be some definite relationship between the citing of magazines, pamphlets and newspapers and current affairs topics on social controversies and environmental problems in all subject areas. There was also a higher citation of magazines and newspapers by students from urban schools than by students from rural schools. These preferences were probably due to student accessibility to a larger periodical and vertical file collection in larger urban schools.

Size or location of school and topic or subject area did not seem to have as much effect on the student use of books or encyclopedias. However, there was a slight tendency to rely more heavily on this information in a rural environment. The high use of books for both current and historical topics in all subject areas by 87 percent of the students was probably due in part to student familiarity with the card catalogue, a book-oriented index. Audiovisual aids such as sound filmstrip sets and motion pictures were principally used as references for historical topics on exploration and events in Canadian history assigned by Social Studies teachers.

Age of Materials Cited

There was a wide time span in the age of the materials cited by students. The oldest publication date cited was

1950 by four students and the most recent publication date cited was 1984 by eleven students. The median date of all references cited was 1976. Forty percent of the materials cited, however, had publication dates within the past five years. Eight percent of the students made reference to materials published only within the past five years. At the other extreme, 26 percent of the students made no reference to materials published within the past five years.

Table 4 presents a synopsis of the median publication date of materials by type of material cited. More current materials cited by students were magazines, pamphlets, newspapers and encyclopedias.

In a closer examination of individual student bibliographies, there did not seem to be any relationship between the quantity of materials cited and the age of materials cited. Students who cited references for more current and controversial topics did, however, tend to cite more currently dated materials and steer away from books. There was also a trend toward citing older materials for more historical topics.

Students in Science and English classes seemed to cite more recent materials than did students in Social Studies and Consumer Education classes despite the individual topic written on. This was partly due to the fact that teachers

Table 4

Median Date of Materials
Cited in Student Bibliographies

Type of Material	Median Date Cited	Range of Dates Cited
Magazines	1982	1974-1984
Pamphlets and Newspapers	1981	1971-1984
Encyclopedias	1980	1950-1984
Books	1972	1950-1984
Audio Visual and Other	1972	1952-1983
All References	1976	1950-1984

of Science and English frequently assigned controversial topics on current social and environmental problems.

Size and location of school had very little effect on the date of the materials cited in general, although, there was a slight tendency in the smaller rural schools to cite older editions of encyclopedias and fewer current periodicals. This was probably due to lower per capita budgets, which might have adversely affected the up-dating of smaller rural collections.

Book Citations

Eighty-seven percent (195) of the 224 students cited books in their bibliographies and books accounted for 54 percent (588) of the total 1096 references. Only 29 students did not cite books. On the other hand, one student cited 12 book titles in his bibliography. The average number of books cited per student paper was two.

The strong preference to cite traditional print material did not seem to be influenced by subject area or topic selection. The location or size of the school also seemed to have little effect on the citing of books. A larger selection of this type of material in most libraries probably influenced the high percentage of books cited by most students. The accessibility of these materials through the card catalogue may also have influenced the large number of citations. The students cited books from all the libraries they reported using.

The oldest publication date of all books cited was 1950 by one student while the newest publication date of all books cited was 1984 by two students. The median publication date was 1972. In a closer look at individual student bibliographies, there seemed to be some indication that the students were not as aware of the publication date of books as the publication date of other materials.

Encyclopedia Citations

Sixty percent of the students cited encyclopedias and encyclopedias accounted for over twenty percent of all materials cited. The large number of references to encyclopedias was probably due to the searching strategy suggested by many teacher-librarians. Students are usually counselled to consult an encyclopedia for a condensed overview of their topic before they begin to search for other material. The citing of encyclopedias in the three main subject areas seemed to indicate the use of this procedure. Out of the 132 students citing encyclopedias, 60 students cited this type of material for Social Studies topies, 40 students cited this type of material for English topics and 31 students cited this type of material for Science topics.

Popular general multi-volumed encyclopedia sets were responsible for most of the encyclopedias cited. A few specialized multi-volumed sets accounted for the remaining encyclopedias cited. Five titles accounted for 75 percent of the 20 encyclopedia titles cited. The behaviour

exhibited by students in citing encyclopedias followed the typical citing pattern described by Trueswell's 80/20 rule (1969). Trueswell felt that a small part of any inventory would usually satisfy the majority of requests for information.

Table 5 lists the ten most frequently mentioned general encyclopedias which accounts for 91 percent of the encyclopedias cited. World Book Encyclopedia proved to be the most popular title, accounting for 41 percent of all the encyclopedias cited. It was mentioned by students in all classes and in every subject area. Collier's Encyclopedia ranked number two in citation frequency. The emphasis on Canadian topics in Social Studies courses contributed to the ranking of Canadiana Encyclopedia in third position. An additional emphasis on biographical topics in Social Studies research probably contributed to the citing of the McGraw-Hill Encyclopedia of Biography. The low use of Encyclopaedia Britannica may be due to the new format of this encyclopedia which some students find confusing.

Fifteen specialized multi-volumed science and historical encyclopedias accounted for six percent of the encyclopedias cited. The McGraw-Hill Encyclopedia of Science and Technology, The Amazing World of Animals and Grizmek's Animal Life Encyclopedia were the most popular of these titles. The emphasis on Canadian biographical content in Social Studies assignments may have accounted for five references to the multi-volumed Dictionary of Canadian Biography.

Table 5

Rank Order of Encyclopedias
Cited in Student Bibliographies
(n = 241)

Rank	Encyclopedia	Number of References	Percent of total References
1	World Book Encyclopedia	99	41 %
2	Collier's Encyclopedia	28	12
3	Canadiana Encyclopedia	21	9
4	McGraw-Hill Encyclopedia of Biography	17	7
5	Compton's Encyclopedia	15	6
6	Encyclopedia Americana	14	6
7	New Book of Knowledge	11	5
8	Encyclopaedia Britannica	6	2
9	Academic American Encyclopedia	6	2
10	Merit Student Encyclopedia	4	1
11 - 20		20	9
Total:		241	100 %

Over half of the encyclopedias cited were recent editions of World Book and Collier's with a median date of 1982. This probably indicates that these titles are consistently up-dated by most school and public library collections. The median date of all encyclopedia references, 1980, may have been influenced by the use of Canadiana Encyclopedia which was last published in 1977 and is now out of print. Most of the older editions cited were encyclopedia sets which students reported using in home libraries. The oldest encyclopedia set cited was a 1950 edition of Encyclopedia Americana from a home library while the newest encyclopedia set cited was a 1984 edition of World Book Encyclopedia from a school library.

Most students cited encyclopedias from the school library. The school library was the source in 82 percent of the 241 encyclopedias cited. World Book Encyclopedia, Collier's Encyclopedia and Canadiana Encyclopedia were the most popular titles cited from the school library.

Encyclopedias from home libraries made up 16 percent of the total encyclopedias cited. World Book Encyclopedia and The New Book of Knowledge were the most popular titles in the 39 encyclopedias cited from home libraries. Only two percent or five references were made to encyclopedias from public libraries.

Magazine Citations

Although magazines accounted for only 14 percent of the total references, student use of them followed a

typical pattern of citing which has been frequently found in studies of scientists and scholars. A few magazines accounted for most of the student citations while the remaining magazines cited were spread over a wide variety of different titles. This phenomenon of literature concentration and scatter was shown by Bradford to be a predictable natural pattern. A high percentage of relevant articles are concentrated in a small number of magazines. For a more detailed explanation of this phenomenon known as Bradford's Law, see Drott (1981).

Table 6 illustrates this pattern of use. The five magazines listed in rank order of citation frequency in this table are 80 percent of the 23 magazines cited by all students. Eighty-two percent (124) of the 152 magazine articles cited by all students came from these five titles. Seven other magazines were cited by two to four students: U. S. News and World Report, Sports Illustrated, National Geographic, Financial Post, Canada and the World, People and Parents. Eleven other magazines were cited only once.

The high number of references to Maclean's, 30 percent of all magazines cited, again reflects the Canadian content of most assignments. Most titles cited are indexed in the Reader's Guide to Periodical Literature and the Canadian Periodical Index which might indicate student awareness of the common subject indexes found in most school, public and college libraries. The only three magazines cited which are not indexed came from home libraries.

Table 6

Rank Order of Magazines
Cited in Student Bibliographies
(n = 152)

Rank	Magazine	Number of References	Percent of Total References
1	Maclean's	45	30 %
2	Time	34	22
3	Newsweek	33	22
4	Canadian Geographic	7	5
5	Science Digest	5	3
6 - 23		28	18
Total:		152	100 %

Students used the school library as the most popular source of magazine articles. About 80 percent (121) of the cited magazine articles were noted as coming from the school library while 20 articles came from public libraries, 9 articles from home libraries, 1 article from the college library and 1 article from a private library. The use of the school library by students was probably due to a concentrated effort by most teacher-librarians to teach the use of indexes. There was a trend toward citing more magazines in city schools than in rural schools, which might have been due to larger collections in larger schools and more indexes in larger schools.

Many topics in English and Science classes were recent and controversial in nature such as abortion and test tube babies. This probably accounted for the high number of references to news magazines such as Maclean's, Time, and Newsweek. Students in English classes cited 108 magazine articles or 71 percent of the total 152 articles cited. Students in Science classes cited 26 articles and students in Social Studies classes cited 14 articles while students in Consumer Education classes cited only four magazine articles.

Only 14 of the 152 cited articles were over five years old. The median date was 1982. This might have been another indication of student awareness of this type of information for current topics. A closer examination of individual student bibliographies revealed that students who

cited magazines often cited more than one title or article and consequently listed fewer books.

Sources of Information

As students were asked to name the specific source of each reference cited on their bibliographic format sheet, some comment can be made on the various facilities that provided information.

Table 7 indicates the type of library facility named by students. The students showed a tendency to name the school library as their major source of information. This facility was indicated by 92 percent of the students. The school library was also the source students identified for over 80 percent of the encyclopedias and magazines cited in their bibliographies. It was the only source named for any audio-visual and vertical file materials cited. The high use of this facility might be due to student familiarity with the collection, the instruction provided by the teacher-librarian, and the accessibility made possible by scheduled class time.

Students did, however, make some attempt to go beyond the school library. The public library was the next most popular source of information with one-quarter of the students naming this facility. Books and magazines were the main types of material cited from this source.

With only one central public library facility in the downtown area of the city, access to the public library collection may have been a problem for students in suburban

Table 7

Type of Library Named
By Students in Bibliographies
(n = 224)

Type of Library	Number of Students	Percent of all Students
School Library	206	92 %
Public Library	53	24 %
Home Library	44	19 %
College Library	6	2 %
Private Library	1	0.4 %

areas. If branch libraries were available in the student's neighborhood, the amount of public library use might have been higher. Students from rural communities had access to relatively small public library collections run by largely volunteer staff.

Nineteen percent of the students indicated the use of a home library. The type of material cited from home libraries was largely encyclopedias. Some of the materials cited from this source were rather dated in contrast to the materials cited from school and public library encyclopedia collections.

A count was made of the number of libraries named by each student. Table 8 shows that over half of the students indicated only one library as the source of information for their topic. About one-third of the students named two or more libraries.

A closer examination of individual bibliographies revealed that rural students tended to rely on only the school library. In city areas, students from smaller schools tended to name more than one library while students from larger urban schools tended to name only the school library. Students in Science and English classes identified more sources of information than students did in Social Studies and Consumer Education classes. Size of

Table 8

Number of Libraries Named
By Students in Bibliographies
(n = 224)

Number of Libraries	Number of Students	Percent Of All Students
1 Library	153	68.6 %
2 Libraries	58	26.0
3 Libraries	12	5.0
4 Libraries	1	0.4
Total:	224	100 %

collection and accessibility might have accounted for these patterns of use.

Student Questionnaires

This analysis explored the results of 224 student questionnaires administered by the classroom teacher following the completion of assigned research papers. The questionnaires were designed to survey the student's perception of their information seeking environment. The students were requested to give more detailed information about the use of various materials and indicate what help and encouragement they might have had in locating materials from any source.

Sources of Information

The first question explored student searching strategy in the community. Students were asked to note what facilities they used even though they may not have found information that satisfied the specific requirements of their assignment. These results were tabulated and then compared with the use of the facilities as reported on the bibliographic format sheets.

Table 9 compares the number and percentage of students who examined materials from each facility with the number and percentage of students who cited using materials from each facility. Students looked at materials from more libraries than the number of libraries named in their bibliographies. In fact, 70 percent (158) of the students

Table 9

Source of Materials Examined, Source of Materials Cited and Relevancy Rate of Finding Appropriate Materials

Type of Library	Source of Materials Examined		Source of Materials Cited		Relevancy Rate
	Number of Students	Percent of all Students (n=224)	Number of Students	Percent of all Students (n=224)	Percent Cited/ Examined
School	221	99%	206	92%	93%
Public	103	46%	53	24%	51%
Home	122	54%	44	19%	36%
College	16	7%	6	2%	38%
Private	3	1%	1	0.4%	33%

examined materials from two or more libraries while 32 percent (71) of the students cited materials from two or more libraries. This attempted use presents a fuller picture of student awareness of the availability of information beyond the school library.

The highest percentage of finding relevant materials was indicated by students using the school library. Ninety-three percent of the students found appropriate materials for their assignments in this facility. Accessibility and instruction may have contributed to this relevancy rate.

Although almost half of the students searched the public library for information, only 50 percent of them actually cited materials for their research assignment. Collection emphasis and the accessibility of this facility may have contributed to this relevancy rate.

It is not surprising that about half of the students searched for information in their home environment. What is surprising, is that only 19 percent of the students were successful in finding relevant material.

Aid in Seeking Information

Questions two, three and four of the student questionnaire surveyed the degree of assistance students received in using various information facilities. The students were asked if they sought and received help in locating information from library staff, family or friends. As these questions were addressing general patterns of

searching behaviour, the results were compared with the number of students who examined materials from each facility. Table 10 presents a summary of the results expressed in percentages.

Although the questionnaire did not ask students why they sought help, it did reveal that 40 percent of the students were willing to accept help in their search for information. This general pattern conforms with other studies of information seeking behaviour. The need for oral communication with personal information providers has proved to be an important factor in the search for information.

Eighty-one percent of the students received aid in using the school library. These results parallel the current school library philosophy of providing active professional assistance during the search process. Forty-five percent of the students reported staff help in the use of public and college libraries. This percentage is somewhat lower than the school library situation. This could indicate the students feel that they must request assistance in public libraries whereas they would automatically be given assistance in the school library.

Some students reported receiving assistance from family and friends. About 20 percent of the students indicated this type of help in using libraries. The lower

Table 10

Aid in Seeking Information

Type of Library	Number of Students Examining Materials	Aid From Library Staff		Aid From Family / Friend	
		Number of Students	Percent of Students	Number of Students	Percent of Students
School	221	178	81%	43	19%
Public	103	46	45%	22	21%
Home	122	N/A	N/A	24	20%
College	16	7	44%	6	38%
Private	3	3	100%	0	0%

percentage reported here may be indicative of student commitment to do their own searching.

Encouragement to Use Collections

Questions five and six on the student questionnaire examined student perception of classroom teacher and teacher-librarian encouragement to use collections. This was an attempt to address the question of student use of facilities beyond the school library. Were students encouraged to go beyond the school library to use libraries in the community as sources of information even though the students may not have acted on the suggestion?

It was interesting to note that teachers in every subject area consistently suggested the use of the school library. In fact, the students reported that 92 percent of their teachers suggested the use of this facility. This is an indication of the classroom teacher's confidence in the school library's capability to supplement the core curriculum. The teacher-suggested use was confirmed by over 90 percent of the students reporting the use of the school library as a source of information in question one of this questionnaire.

About one-half of the students (125) reported that the classroom teacher and the teacher-librarian suggested the use of the public library collection as a source of information. This suggested use was confirmed by one-half of the students reporting the use of this facility in question one of this questionnaire.

About one-third of the students (68) reported the suggested use of the college library by both the classroom teacher and the teacher-librarian. The low attempted use of this facility by only 16 (7 percent) of the students is in direct contrast to the suggested use of the facility.

One-third of the students (67) reported that the classroom teacher suggested the use of materials in the home library whereas only 39 (17 percent) of the students reported this suggestion as coming from the teacher-librarian. It is interesting to note that over 50 percent of the students reported that they attempted to use materials from a home library.

Only about 15 percent (30) of the students reported the suggested use of private libraries in the community. These kinds of results are not too unusual as only specific topics would lend themselves to the use of this type of collection. Consumer Education and Social Studies students, however, should have been made aware of private government and business libraries in the community as some of their topics centered around aspects of Canadian industry.

A summary of the results of questions five and six revealed that 56 percent of the teachers (122) and teacher-librarians (132) suggested the use of more than one library to their students. It is interesting to note that 70 percent (158) students reported in question one they had examined materials in more than one library.

Non-library Sources of Information

Question seven on the student questionnaire examined the use of information sources which might be available outside the institutional environment. Personal interviews, writing or contacting organizations, viewing television programs and borrowing materials from the teacher were some of the possible non-library sources of information suggested by the researcher. Students were encouraged to list others.

Although the total number of students reporting the attempted use of these sources was not high, the 76 (34 percent) students who did attempt to use them demonstrated an astute awareness of specialized community facilities which could provide relevant information for specific topics.

Television viewing was most frequently named as a non-library source of information by 54 (25 percent) of the students. This was especially true for current topics assigned in English and Science classes such as drug abuse, brain diseases, acid rain, child abuse, and television violence. The teacher was mentioned as the next non-library source by 29 (13 percent) of the students. More students in rural classes mentioned borrowing materials from their teacher.

Personal interviews and contacting organizations by telephone were noted by 17 (8 percent) of the students. Topics such as Down's syndrone, stress, abortion, and the

fashion industry prompted this search for information. One student even mentioned an interview with radio personnel to find information on his topic, music and teens. Several students mentioned interviewing people in the community for information on the depression in Canada.

Teacher Questionnaires

Each of the ten teachers who volunteered to take part in the study completed a teacher questionnaire which focused on student topic selection, teacher guidance, and teacher interaction with libraries. The results of this survey provided more insight into the student's information seeking environment. A detailed report of these results was a departure from the Mancall and Drott (1983) model where only generalized statements were included from the results of a teacher questionnaire.

Topic Selection

Part one on the teacher questionnaire asked the teacher to indicate the situation that best described student selection of a topic for the assigned research paper. As all assignments were a component of a core curriculum course, the topics selected were directly related to or an extension of material studied in the classroom.

Seven out of the ten teachers assigned general topics and gave the students the choice of selecting a particular aspect of the broad subject area. This gave students some freedom to explore areas of interest beyond the information

received in class notes and textbooks. A choice of topic also provided the students with more motivation to search for information than a specifically assigned topic which did not interest them.

Two Social Studies teachers gave the students a list of very specific topics to choose from. Only one English teacher gave students an unlimited choice of topic although the subject area had to be controversial. A higher use of materials by these English classes might have been a reflection of how a free choice of topic could influence student behaviour.

A more detailed listing of the actual topics chosen by the students appears in the bibliometric analysis section of this chapter.

Teacher Guidance

The role of teacher guidance in student information seeking was explored in part two of the questionnaire. Questions one, two and three of this section asked the teacher to indicate any sources of information they may have suggested to their students.

All teachers reported that they had suggested the use of the school library. This was confirmed by the results of the student questionnaire as the students reported that 92 percent of their teachers had suggested the use of this facility.

Eight out of ten teachers (80 percent) indicated that they had suggested the public library as a source of

information. The student results, however, showed that only 50 percent of the teachers had suggested the use of this collection.

Four teachers (40 percent) indicated the suggested use of home libraries and only one English teacher (10 percent) indicated the suggestd use of college and/or private libraries. It was interesting to note that the students had reported that one-third of their teachers suggested the use of home libraries, one-third of their teachers suggested the use of the college library, and 15 percent of their teachers suggested the use of private library collections.

Six out of ten teachers (60 percent) suggested the use of more than one library to their students. This was confirmed by the results of the student questionnaire as students reported that 56 percent of their teachers suggested the use of more than one library.

Two teachers (20 percent) suggested that students use television as a non-library source of information and three teachers (30 percent) suggested that students use interviews or other means of communication with community organizations. The students reported on their questionnaire that television sources were suggested by 25 percent of their teachers and personal interviews and contacting organizations were suggested by eight percent of their teachers.

The student's perception of teacher encouragement to use various sources of information was, in general, confirmed by the suggested use of information sources reported by their teachers on the teacher questionnaire. The data from the suggested use of sources reported on the teacher questionnaire can also be compared with the sources of materials actually examined by students as reported on the student questionnaire. Table 11 presents this comparison. As the percentages indicated are similar, it might be assumed that teacher suggestion has some influence on student searching behaviour.

Interaction with Libraries

Part three on the teacher questionnaire looked at the teacher's interaction with the school library and other sources of information in the community.

In question one, all teachers reported that they had notified the teacher-librarian about the class assignment and had arranged for teacher-librarian instruction. Eight out of ten teachers indicated that they had actually planned the assignment with the teacher-librarian. This confirmed assumed evidence of classroom teacher and teacher-librarian cooperation mentioned earlier in this study. Two teachers also indicated that they had given some type of instruction on library use in the classroom as well as providing for teacher-librarian instruction. Planned instruction in the use of materials in the school

Table 11

Suggested Information Sources
and Sources of Information Examined

Type of Library	Source of Information Suggested by Teachers	Source of Information Examined By Students
School Library	100 %	99 %
Public Library	60 %	46 %
Home Library	40 %	54 %
College/Private Library	10 %	8 %

library collection may have influenced the 99 percent use of this facility by students.

In question two and three, nine teachers indicated that they had made no attempt to contact any libraries or other sources of information in the community. One Consumer Education teacher; however, did report making arrangements with the public library. One teacher reported that all outside contacts were made by the students themselves. The lack of teacher interaction with community sources of information was reflected in the low use of these facilities by their students.

In summary, the results of the teacher questionnaire provided more evidence to support the researcher's assumption that guidance and instruction may affect student searching strategy and use of information.

Teacher-Librarian Interviews

The teacher-librarians in each of the eight schools of the ten teachers that took part in the study were interviewed. These interviews were conducted after all the completed student bibliographies, student questionnaires, and teacher questionnaires were received by the researcher. The results of these interviews provided the researcher with additional information about the student's specific learning environment and its possible effect on their seeking behaviour. By looking more closely at the teacher-librarian's role in assisting students and teachers with research assignments, some further comments could be

made about the influence of services and instruction on student behaviour.

A detailed report of these results was a departure from the Mancall and Drott (1983) model where only generalized statements were included from teacher-librarian interviews. Teacher-librarian responses to individual questions are summarized below. Representative quotations are taken directly from verbatim transcripts of the personal interviews.

Accessibility and Collection Development

As the researcher felt accessibility may have influenced student use, teacher-librarians were queried about school library hours. In all schools, the library was open one half-hour before classes, at least one-half hour of the noon break, and one-half hour after classes. This time was available to students in addition to regularly scheduled class time for research assignments. In three larger city schools, where there was more than one teacher-librarian, the library was open during the entire school day and at least one teacher-librarian was always available to students and teachers.

Selection policies and collection development were also explored in the interviews with teacher-librarians. All teacher-librarians reported trying to find materials that fit into the curriculum. There was a definite emphasis on the selection of curricular oriented materials as

opposed to materials selected for pleasure reading. This was noted as being especially true in times of restraint. Most also commented on an effort to support new curriculum. One teacher-librarian noted the selection of materials in "those areas where we have squeaky wheels--what people want". All reported that they consulted standard reviewing tools and discussed selection with department heads and teachers in the school. These selection policies may have accounted for the high use of school libraries by students who were assigned topics geared to the core curriculum.

All teacher-librarians commented on the importance of keeping reference materials up-to-date and indicated that replacing popular titles of encyclopedia sets was a high priority. This policy was reflected in the student use of more recent publication dates of this type of material from school libraries.

All teacher-librarians commented on the restriction of magazine subscriptions in times of restraint. One large school had reduced their subscriptions by half in the last three years. Many indicated purchasing those magazines that were indexed and cancelling subscriptions of popular magazines for recreational reading. Several had also cancelled their subscription to the Canadian Periodical Index as it had become too expensive for the amount of use. Reduction in the purchase of audio-visual materials was also mentioned because of prohibitive costs. These res-

trictions might have influenced the lower use of these types of materials by students in some schools.

Assignment Planning and Instructional Programs

All teacher-librarians indicated pre-planning activities with teachers giving research assignments. As one stated:

> I tell the department heads that I do hope to meet with the teachers before an assignment is designed and obviously before the class comes into the library. I really try to find out what the objectives are of the lesson and then we can build together from there.

Another stated: "I won't take their class unless we have consulted" and "I will identify objectives first". All teacher-librarians emphasized the important teaching role of the librarian.

> My pet thing is that the librarian is a teacher and I find that sometimes contrasts with my colleagues here--in a sense that when classes come in to do an assignment, the content of the assignment they're looking for is a vehicle for learning skills--I'm not just talking library skills.

> I feel my role as a teacher is very important so that when students do come in the library, I think of good motivational skills--activities that I might use so that the students will become more enthusiastic about their topic.

These and other comments suggested the active role teacher-librarians were taking in assuring educational goals were met.

One teacher-librarian commented:

> I don't really care as much about what or how many things kids use--I care about how they find them--then how they use what they find--the skill involved is the important thing.

This statement and others on teaching searching strategies and report writing indicated the commitment of most teacher-librarians to training students in research skills. It also confirmed the teachers indication of teacher-librarian instruction on the teacher questionnaire.

When asked what kind of specific assistance students were given for research assignments, the following comment was typical:

> Oh, all kinds--from looking at general subject headings or specific ones--helping them with the periodical indexes--suggesting more difficult encyclopedias to them and going over indexes for more technical types of encyclopedias.

This emphasis on teaching skills did not mean that teacher-librarians were not also concerned about the types of material in their collection that were useful for specific assignments.

> I've got one assignment coming up tomorrow that I have to do a lot of research on my own because its an obscure topic so I will try to make myself aware of where all the sources are before the students arrive in the library and will probably draw up a formal resource list.
>
> In each case,, its an assignment that works with the collection that we have or stuff that I know I'll have time to get in for them. A collection that works--that the assignment has to work

> in that sense--there must be resources to back it up.

Interaction With Other Sources

Teacher-librarians were also asked to comment on their interaction with other sources of information in the community. The following statements were typical:

> C.N.C. (College of New Caledonia) and the Public Library mostly referred to--occasionally places like City Hall, or other places may have specialized collections--that may work for that assignment.

> Yes, I have done--in fact, we've been using the elementary school next door quite a lot and I do urge children to go to the Public Library and to the local College Library.

> Do research in indexes here--then send to C.N.C., etc., for journals we don't subscribe to--especially if a technical journal that they may not find here.

Two teacher-librarians commented on the use of the District Resource Center for film and video materials. One large school commented:

> Yes, but we have such a big collection here most of the time that you can usually set an assignment that can use the resources you have--and therefore it's only the odd kid--the particularly bright that may want some 'high-faluting' resource we don't have.

This comment and other indications of "not always", "I should more" and "rarely" notifying other community information sources about student research assignments might have contributed to students low use of these facilities.

The above comments made by the teacher-librarians on accessibility, collection development, instructional planning and interaction with the community provided more evidence to support the researcher's assumption that instruction and services influence student information seeking behaviour.

Discussion and Overview of Findings

Patterns of student information behaviour can be reported from the results of bibliometric analysis, surveys and interviews. The major patterns established in this Canadian study are somewhat similar to the patterns reported in the Drott, Mancall, Barber and Robinson (1980) and Wozny (1982) studies. Differences in this study may be due to the emphasis on a more heterogeneous student sampling and the survey of teacher research assignments more directly related to core curriculum courses.

Overview of Findings

The patterns of grade ten student information seeking behaviour that have been described in this chapter are summarized below:

Use of Materials

1. The typical student cited three to five pieces of material in their bibliographies. The mean number of references was 4.9 and the median was 3.5.

2. Books were cited more than any other type of material. Fifty percent of the references counted in the

bibliographies were books and 87 percent of the students cited this type of material in their bibliographies.

3. Encyclopedias received the next highest percentage of use. Twenty-two percent of all references were to encyclopedias and encyclopedias were cited in 60 percent of the bibliographies. Five encyclopedia titles accounted for over 75 percent of the total encyclopedia titles cited.

4. Magazines were cited in 29 percent of the bibliographies and accounted for 14 percent of all references. The majority of magazines cited were indexed in the Reader's Guide to Periodical Literature and the Canadian Periodical Index. The pattern of magazine citing followed Bradford's Law as a few titles accounted for most of the references to magazine articles.

5. Pamphlets, newspaper clippings, audio visual aids and other materials accounted for 10 percent of all citations and were cited in 2 percent of the student bibliographies.

6. The median publication date of all materials cited in the student bibliographies was 1976. Median publication dates of encyclopedias (1980), magazines (1982) and newspaper clippings (1981) indicated student awareness of the currency of these types of materials.

7. When student questionnaires were compared to student bibliographies, it was found that students had examined more materials than they had cited.

Sources of Information

1. School library collections were the major source of information for students. Ninety-two percent of the students named this source in their bibliographies.

2. Public library collections were the next major source of information for students. Twenty-four percent of the students named this source in their bibliographies.

3. Home library collections were the source of information named by 19 percent of the students in their bibliographies.

4. College library collections and other sources were named by 2.5 percent of the students in their bibliographies.

5. Students examined materials in more libraries than they cited in their bibliographies. Seventy percent of the students reported on the student questionnaires that they examined material in two or more libraries while 32 percent of the students named two or more libraries in their bibliographies.

Guidance and Instruction

1. Student examination of materials was probably influenced by the classroom teacher's assignment. Restriction of topic chosen and teacher expectations noted in the teacher questionnaire might have accounted for the examination of materials in certain subject areas. Current or historical topics were noted as having some effect on the citing of materials in student bibliographies.

2. Student examination of materials was probably influenced by teacher and teacher-librarian suggestion of information sources as reported in the student questionnaires, teacher questionnaires and teacher-librarian interviews.

3. Students asked for more assistance from their teachers and library personnel than from family or friends as reported in the student questionnaires.

Environmental Factors

1. Although there was a great variety of individual referencing done by students, similar patterns occurred across rural and urban schools in the school district. Class size and location of school seemed to have a minimal effect on the citing of materials as noted by the coding of the student bibliographies.

2. The size and type of school library collection seemed to have some effect on the citing of materials. Students from larger schools with larger school library collections tended to cite fewer sources of information. Teacher-librarian interviews revealed that school library collections were geared to the core curriculum and the availability of this type of collection may have influenced student use.

Comparison to Other Findings

The majority of the findings of this study were similar to the majority of the findings of the model studies in which more academically oriented students from largely

independent study courses were surveyed. Some differences in the findings of this study should, however, be noted:

1. The typical student tended to cite fewer materials in this study. The median number of references in this study was 4.9 while the median number of references in the Drott, Mancall, Barber and Robinson (1980) study was 5.65 and 8 in the Wozny (1982) study.

2. A higher percentage of students cited encyclopedias in this study. Twenty-two percent of all student references were to encyclopedias in this study while only seven percent of all student references were to encyclopedias in the Drott, Mancall, Barber and Robinson (1980) study and ten percent of all student references were to encyclopedias in the Wozny (1980) study.

3. Students had a stronger tendency to name school library collections as the major source of information in this study as did students in the Wozny (1982) study. Ninety-two percent of the students in this study and in Wozny's study cited materials from the school library while only 77 percent of the students cited materials from the school library in the Drott, Mancall, Barber and Robinson (1980) study.

4. Students made less use of public library collections in this study. Only 24 percent of the students in this study cited materials from the public library while 75 percent of the students cited materials from the public library in the Drott, Mancall, Barber and Robinson (1980)

study and 83 percent of the students cited materials from the public library in the Wozny (1982) study.

5. Students tended to cite more current editions of encyclopedias and more current issues of magazines in this study. Eighty-eight percent of the magazine articles cited in this study were from magazines issued within the last five years while only 60 percent of the magazine articles cited in the Drott, Mancall, Barber and Robinson (1980) study were from magazines issued within the last five years of the time the study took place. The median date of the encyclopedias cited in this study was three years old while the median date of this type of material cited in the Drott, Mancall, Barber and Robinson (1980) study was nine years old.

The disparities in this study could be due to the use of a sampling of students with a wider range of ability who were given teacher assignments related to a core curriculum. Student perception of accessibility and availability of materials and instructional methodology may also have accounted for some variance in the results.

The most important overall conclusions to be drawn from the results of this study and the model studies were aptly stated by Drott, Mancall, Barber and Robinson (1980):

> Students at high school level show that they have already developed their own styles and habits in seeking and using information. Clearly, any instruction-

al program must take into account the student's present behaviors. (p. 8)

Those responsible for building collections cannot afford to look inward. By looking at actual patterns of use it becomes clear that collection development and management must be linked to user education--particularly since this user (the high school student) will be expected to function in an increasingly information-dependent society. (p. 38)

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

Introduction

In the first chapter of this study, questions were formulated to guide an investigation into the information seeking behaviour of grade ten students when assigned research papers in core curriculum courses. A study was designed to provide answers to these questions. The instrumentation used to measure student behaviour focused on user information demands and included: bibliometric analysis, student questionnaires, teacher questionnaires and teacher-librarian interviews. The data collected by these measures was analyzed and formed the basis of the discussion in the data analysis section of this study.

The purpose of this chapter is to outline the major findings of the study, to present conclusions which were drawn from the results, to comment on the general significance of the study, to indicate implications for practice, and to make recommendations for future research. It is hoped that the results of this investigation will serve as a basis for the further development of school library programs and services which will satisfy the present demands and future needs of users.

Major Findings

The general patterns of information seeking behaviour exhibited by the students in this study are outlined below.

Uses of Materials

1. The typical student tended to cite three to five pieces of material in their bibliographies.

2. Students tended to cite books more than any other type of material. Encyclopedias received the next highest percentage of use. Magazines were less used and used by fewer students. Other types of material received little attention.

3. Students did not always cite particularly current publications of all materials. They were, however, more aware of publication dates of magazine, encyclopedia and newspaper materials.

4. Students examined more materials than they cited in their bibliographies.

Sources of information

5. Students have a strong tendency to use school library collections. Public library collections received the next highest percentage of use. The use of home and college collections was relatively low. More specialized collections received little use.

6. Many students examined materials in more than one library but only a small percentage cited materials in more than one library.

Guidance and Instruction

7. Students may have been influenced by teacher expectation and teacher assignment.

8. Students may have been influenced by teacher and teacher-librarian instruction.

9. Students seemed to ask for assistance from professionals more than from family or friends.

Environment

10. Individual students differ but student groups were similar across the district.

These findings answer the questions of student information seeking behaviour that were outlined in the research questions of this study.

Conclusions and Implications

From the findings of this study, some general conclusions can be drawn which have implications for practice.

1. Students have already developed some definite habits in seeking and using information. These present patterns of student information seeking behaviour must be taken into account by classroom teachers and teacher-librarians when designing instructional programs. Bibliographies of student research papers should be continually examined to monitor patterns of student behaviour and programs adjusted to suit the changing demands of the students.

2. Students are very oriented towards the use of print materials. This orientation should also be noted in

the design of instructional programs and acquisition of materials.

3. Students are very oriented towards using the school library as the major source of information. Therefore, classroom teachers and teacher-librarians should continue to be involved in the cooperative planning of research assignments which emphasize the teaching of research skills in the school library. Although school library collection development should continue to support the core curriculum, perhaps students should be made more aware of the title diversity in other collections. As the research of Altman (1972) and Doll (1983) indicates that less than 50 percent of school and public library collections overlap, students might be encouraged to make more use of the public library collection.

4. Teachers and teacher-librarians seemed to have some influence on student information seeking behaviour. This confirms the findings of Blazek (1975) and also supports Warner's (1973) and Chen and Hernon's (1982) studies of information seeking where they found that interpersonal providers of information influenced the user's choice of materials and information sources. As professional guidance and direction may be more important to students than even the availability of materials, classroom teachers and teacher-librarians should concentrate on the development of life-time investigative skills. The patterns of student information seeking

behaviour investigated in this study could provide a foundation on which they might build programs to fulfill the future needs of their students. By monitoring the present behaviour of students as information users, they may be able to design programs and services which will prepare their students for an information rich society.

Recommendations for Further Study

Based on the findings of this study and the related literature, some recommendations for further research are:

1. Other bibliometric studies are necessary to monitor local student information seeking behaviour as there is no guarantee that the patterns established in this study will be consistent over time. (Line, 1982, p.28)

2. Further studies are needed to explore the influence of classroom teacher and teacher-librarian cooperative planning and instruction on student information seeking behaviour.

3. Studies of the psychology of information use should be designed in an attempt to understand why users experience success and failure in obtaining information. These studies could contribute toward the evolution of a theory of user behaviour. As Fine (1984) explains:

> It is not enough to know 'that' people behave as they do, we also need to understand 'why' and 'how' if we are to attempt to solve problems whose origins are in human behaviour. (p. 457-458)

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Appendix A

Bibliographic Format Sheet

With

Teacher Instructions

BIBLIOGRAPHY

TEACHER INSTRUCTIONS:

1. Please ask the students to note the topic they have written on and the subject area or course name.

2. Request students to list each and every type of material used as a reference in the research and writing of their papers.

3. Provide the students with as many copies of the bibliographic form as they will need to list all the resources used in the researching and writing of their papers.

4. In the TYPE OF MATERIAL column, the students could use one of the following terms:

LIBRARY RESOURCES	OTHER RESOURCES
BOOK	TELEVISION
FILMSTRIP	RADIO
FILM	CINEMA
SLIDES	INTERVIEWS
CASSETTE	FIELD TRIPS
VIDEOTAPE	
PAMPHLET	
MAGAZINE	
NEWSPAPER	
REALIA	
GAME	
MODEL	

Students may need help distinguishing between a multi-media kit and its components. Please have them indicate the actual pieces of the kit they used in their research. If any type of material other than the above is used, please have the students specify.

5. In the SOURCE column, the students could use one of the following terms:

SCHOOL LIBRARY
PUBLIC LIBRARY
COLLEGE LIBRARY
PRIVATE LIBRARY (companies, research organizations, special groups)
HOME OR PERSONAL LIBRARY

If another source of material is used, please have the students specify.

6. Collect only the bibliographic pages from each student's assignment and place them along with the student questionnaires in the envelope provided.

BIBLIOGRAPHY

TOPIC..... SUBJECT AREA.....

AUTHOR	TITLE	PUBLISHER PRODUCER MAGAZINE	PUBLI-CATION DATE	TYPE OF MATERIAL	SOURCE

Appendix B

Student Questionnaire

With

Teacher Instructions

LIBRARIES AND RESEARCH PAPERS

Student Questionnaire

TEACHER INSTRUCTIONS:

1. Administer the student questionnaire after the student assignments and bibliographies are collected.

2. To preserve anonymity, instruct the students not to identify themselves.

3. Remind the students to place a check mark in the appropriate boxes provided.

4. Please collect the completed questionnaires and place them along with the bibliographies in the envelope provided.

LIBRARIES AND RESEARCH PAPERS

Student Questionnaire

EXPLANATION:

This questionnaire is designed to help determine to what extent you used various libraries in preparing your research paper and if libraries met your needs.
All replies will be kept confidential.

State your research topic here: .....

Place a check mark (✓) in as many boxes as apply.

1. Did you use any of these libraries in preparing your research paper, even if you didn't find any information?

   a. ☐ school library

   b. ☐ public library

   c. ☐ college library (CNC)

   d. ☐ private libraries, i.e., those belonging to companies, research organizations or special groups

   e. ☐ home or personal library

2. Did anyone from the above libraries help you find information?

   a. ☐ yes

   b. ☐ no

   If yes, please specify in which types of libraries you received help.

   a. ☐ school library

   b. ☐ public library

   c. ☐ college library

   d. ☐ private libraries

   e. ☐ home or personal library

3. Did anyone else, such as a friend and/or family member help you use a library by accompanying you and assisting you there?

a. ☐ yes

b. ☐ no

If yes, please specify in which types of libraries you received this help.

a. ☐ school library

b. ☐ public library

c. ☐ college library

d. ☐ private libraries

e. ☐ home or personal library

4. Many times friends and/or family members are able to gather information from libraries for students. Did someone use any library for you? In other words, use it for you without you being present.

a. ☐ yes

b. ☐ no

If yes, please specify which types of libraries were used by someone else for you.

a. ☐ school library

b. ☐ public library

c. ☐ college library

d. ☐ private libraries

e. ☐ home or personal library

5. Did your teacher suggest where you could find information in any of the following libraries?

   a. ☐ school library
   b. ☐ public library
   c. ☐ college library
   d. ☐ private libraries
   e. ☐ home or personal library

6. Did your school librarian suggest where you could find additional information in any of the following libraries?

   a. ☐ public library
   b. ☐ college library
   c. ☐ private libraries
   d. ☐ home or personal library

7. Below are a list of non-library sources of information. Did you use any of these sources even if you didn't find any information?

   a. ☐ personal interviews to collect information
   b. ☐ writing to individuals, organizations, agencies or associations for available material
   c. ☐ personally contacting individuals, organizations, agencies or associations for available material
   d. ☐ viewing a television program
   e. ☐ consulting a telephone directory
   f. ☐ borrowing materials from your teacher
   g. ☐ other, please specify below.

   _____

   _____

Appendix C

Teacher Questionnaire

LIBRARIES AND RESEARCH PAPERS

Teacher Questionnaire

EXPLANATION:

This questionnaire deals with those aspects of the research assignment related to library services and resources. All replies will be kept confidential.

Place a check mark (✓) in as many boxes as apply.

I. TOPIC SELECTION

1. Read the following statements and place a check mark beside the situation that best describes how a student selected a topic for his/her research assignment.

   a. ☐ The student had an unrestricted choice of topic.

   b. ☐ The student was assigned a general topic but was given the choice of selecting a particular aspect of the topic.

   c. ☐ A list of specific topics was presented from which a student selected one.

   d. ☐ A specific topic was assigned to each student.

   e. ☐ Other, please specify.

   _____

   _____

II. GUIDANCE IN LOCATING INFORMATION

1. Below are a list of the types of libraries students may go to in search of information. Check those you suggested to students.

   a. ☐ school library

   b. ☐ public library

   c. ☐ college library (CNC)

   d. ☐ private libraries, i.e., those belonging to companies, research organizations, special groups

   e. ☐ home or personal library

   f. ☐ none of the above

2. Below are a list of non-library sources of information. Check those you <u>suggested</u> to students.

a. ☐ personal interviews to collect information

b. ☐ writing or contacting individuals, organizations, agencies or associations for available material

c. ☐ viewing a television program

d. ☐ consulting a telephone directory

e. ☐ borrowing materials from their teachers

f. ☐ other, please specify

_____

_____

g. ☐ none of the above

3. Instruction in library use may be provided in a variety of ways. Below are a list of possibilities. Check any of the procedures you followed.

a. ☐ General classroom instruction in the use of the school library was provided by the teacher.

b. ☐ General instruction in the use of library tools and materials was provided by the school librarian.

c. ☐ The teacher accompanied students to a public library and provided instruction for them there.

d. ☐ The teacher accompanied students to the college library and provided instruction for them there.

e. ☐ Other, please specify

_____

_____

f. ☐ none of the above

III. INTERACTION WITH LIBRARIES

1. Describe your own interaction with libraries in relation to your student's research papers by checking any of the following that apply.

A. Interaction with the school librarian

a. ☐ Planned with the librarian before the assignment was given.

b. ☐ Notified the librarian of the assignment before the assignment was given.

c. ☐ Did not notify the librarian of the assignment.

d. ☐ Knew from past experience which topics could be researched in the school library.

e. ☐ Arranged with the school librarian to borrow materials for students.

f. ☐ Other, please specify.

_____

_____

B. Interaction with libraries outside the school

a. ☐ Discussed the assignment and topics with the public librarian.

b. ☐ Discussed the assignment and topics with the college librarian.

c. ☐ Borrowed materials for students from libraries outside the school.

d. ☐ Loaned materials from my personal library to students.

e. ☐ Other, please specify.

_____

_____

f. ☐ None of the above.

IV. INTERACTION WITH ORGANIZATIONS OTHER THAN LIBRARIES

List below any contacts made with organizations other than libraries in relation to the student's research papers.

_____

_____

Appendix D

Teacher-Librarian Interview Schedule

Interview Schedule Guide

Introduction To Be Read To Each Interviewee.

By conducting this study, I am trying to find out something about grade ten student's use of information and patterns of information seeking behaviour when assigned a specific research topic. For the past years, we have maintained that students need certain research skills and information to function in a complex learning environment. Hopefully, my research will give us some insight into the actual use students are making of information and provide us with some concrete guidelines for establishing collection policies, instructional programs and media services, especially in these times of restraint.

During the interview, I will be reading you some questions and I would appreciate your honest response to each. Please feel free to make any comment you wish.

Forgive me for not commenting on your responses, but I do not want to influence you in any way.

Please be aware that I am tape recording our session but be assured that your answers will remain anonymous.

Should any further questions arise, I will be happy to discuss them with you after the interview.

Question 1. What are your library hours?

probe 1. Are the hours of the library the same as those of regularly scheduled classes?

probe 2. Is the library open for some time before school, at noon hour and after school?

probe 3. Are there any reasons for the restriction of library hours?

Question 2. Can you outline your current selection policies?

probe 1. Do you consult standardized lists and make use of available review tools?

probe 2. Do you consult with individual subject teachers and departments?

probe 3. Do you make an effort to support new curriculum?

Question 3. How do tighter budget considerations effect your selection policy?

probe 1. Do you place nore emphasis on the development of a good reference collection?

probe 2. Do you restrict your selection to materials that will support curriculum?

probe 3. Have you found it necessary to restrict your magazine subscription policy?

Question 4. What preplanning activities for research assignments do you attempt to do with the teaching staff of your school?

probe 1. Do the teachers consult you before assigning a research paper?
probe 2. Do you research the availability of materials for assignments?
probe 3. Do you suggest the teaching of any necessary research skills?

Question 5. What assistance do you give students when they come into the library to do a research assignment?

probe 1. Do you let the students know about the best materials available for their assistance?
probe 2. Do you prepare any formal list of these materials?
probe 3. Do you provide any individual assistance?

Question 6. Do you suggest the use of any other sources in the community?

probe 1. The public library?
probe 2. The college library?
probe 3. Other sources?

Question 7. Do you make any attempt to borrow materials from other sources for your students?

probe 1. The district resource center?
probe 2. The public library?
probe 3. Other sources?

Question 8. Do you make any attempt to notify other sources in the community about research assignments?

probe 1. The public library?
probe 2. The college library?
probe 3. Other sources?

Question 9. Is there any other topic you would like to comment on that you feel is important to my understanding of how students use library materials and the teacher-librarian's role in stimulating the use of these materials?

Appendix E

Relevant Letters

1983.09.08

MEMORANDUM

TO: Secondary Principals

FROM: Iris McIntyre
Coordinator of Curriculum Supervision

SUBJECT: BARBARA HALL'S RESEARCH PROJECT: PATTERNS OF GRADE TEN STUDENT INFORMATION SEEKING BEHAVIOUR

Barbara Hall, librarian at Duchess Park, is undertaking a research project for her Masters at the University of Alberta. The project has been approved by the District Screening Committee on Research projects.

The research project, which replicates a previous study, requires the voluntary cooperation of some Grade 10 teachers who plan to give research assignments involving outside information resources. The subject areas selected are: English, Socials, Science and Consumer Education.

In order to meet the requirements of the District Screening Committee, this project may proceed with these provisos:

- that teacher participation is voluntary
- that teacher and student identification on survey forms is removed before being returned to the investigator
- that the sample size for the survey be 1 teacher from each school enrolling Grade 10 classes in one of the selected subjects
- that the information gathered be used solely for the investigator's thesis and that there be no other public or private publication.

Participating teachers would be provided with bibliographic forms to distribute to classes following each research assignment. In addition, there are teacher questionnaires and student questionnaires to complete. Distribution and collection of all materials would be made through Curriculum Supervision to help ensure that the committee's provisos are met.

The research design requires a sample that includes all secondary schools in the district and which is balanced across the for subject areas: English, Socials, Science and Consumer Education

..../2

Preferably, the sample would look like this:

One Grade 10 teacher and class for each subject at each school as per chart:

English	Kelly Road	PGSS	Valemount
Socials	Duchess Park	John McInnis	McBride
Science	College Heights	Lakewood	D.P. Todd
Consumer Ed.	Blackburn	Kelly Road	Mackenzie

I would appreciate it if you could recommend one of your teachers who is willing to participate. If the subject area designated for your school is inappropriate we would have to arrange a "trade" with another school. Let me know how this works out for you. Thank you for your consideration of this request.

IMc/lm

1984.01.24

MEMORANDUM

TO: L. Rodger, Principal, Prince George Secondary
D. Chamberlain, Principal, John McInnis Secondary
T. Ryan, Principal, College Heights Secondary
R. Bacon, Principal, Blackburn Secondary

FROM: Iris McIntyre
Coordinator
Curriculum Supervision

SUBJECT: Barb Hall's Research Project

I promised Barb Hall I would approach you once more to see whether any of your teachers might now be interested in participating in her research project. She is looking for a Grade 10 teacher in either English, Socials, Science or Consumer Ed.

If any of your teachers are interested, just ask the person to call me for details. Thanks.

I'm enclosing a copy of the previous memo.

IMc/lm
encl.

CENTRAL ADMINISTRATION OFFICE

SCHOOL DISTRICT N[illegible]
PRINCE GEORGE B.C.
Phone 564-1511

1894 9th AVENUE, PRINCE GEORGE, B.C. V2M 6G6

Telex 047-8817

January 24, 1984

Dear :

Re: Barb Hall's Research Project:
Patterns of Grade Ten Student
Information Seeking Behaviour

I promised Barb I would contact the people participating in her research project and let you know about the next step.

If you have completed the first part of the study with your students, please forward the materials to me, not to Barb. The questionnaires should not show any marks that would identify your school or any individual, but please mark your school name and the subject on the envelope. I shall then code your returned material prior to passing this on to Barb. If you have a question, just give me a call.

Thanks a lot.

Yours sincerely,

Iris McIntyre
Coordinator of Curriculum Supervision

IM/bjp

Dear

Re: Barbara Hall's Research Project

Thank you very much for agreeing to participate in the above research project. I am enclosing the package of materials for your use. The cover letter written by Barbara should be self-explanatory. If not, feel free to give me a call.

Please note that your confidentiality is protected. Your identity and that of your school will not be disclosed to the researcher.

Thanks again for your cooperation and very professional attitude in this matter.

Yours sincerely,

Dr. Iris McIntyre
Coordinator of Curriculum Supervision

IMc/lm
encl.

DUCHESS PARK SECONDARY SCHOOL

SCHOOL DISTRICT No. 57
PRINCE GEORGE, B.C.
Phone 564-1511

2371 ROSE CRESCENT, PRINCE GEORGE, B.C. V2M 1Y8 Telex 047-8817

Dear Colleague:

Thank you for volunteering to participate in my study of the patterns of grade ten student information seeking behaviour. I would appreciate it if you would take a few minutes of your time to assist me in collecting information on the type of research materials used by your students.

When you assign your next research project, please request your students to:

1. Fill out the enclosed bibliographic form to note the resources used in completing their assignment. (This could be handed in with the written part of the assignment and detached later).
2. Fill out the enclosed student questionnaire after the assignment is turned in to you.

Return the class set of student bibliographies and completed student questionnaires to Dr. Iris McIntyre, Co-ordinator of Curriculum Supervision before March 31, 1984. A short teacher questionnaire will then be forwarded to you in order to elicit additional information.

If you wish to submit the bibliographies from the research assignment of more than one of your grade ten classes, please feel free to do so. Additional copies of bibliographic forms and students questionnaires are available.

Should you have any other questions regarding this study, please don't hesitate to contact Dr. McIntyre at 564-1511, local 315.

Thank you for your kind co-operation.

Yours very truly,

B.A. Hall,
Librarian

DUCHESS PARK SECONDARY SCHOOL

2371 ROSS CRESCENT PRINCE GEORGE BC PHONE 563 7124

Dear Colleague:

Thank you for participating in my study of the patterns of grade ten student information seeking behaviour. The bibliographies and questionnaires of your class will provide me with valuable information on the nature of resources used by students in writing a research paper.

As more data will increase the validity and reliability of my study, I would encourage you to submit the student bibliographies from another grade ten research assignment that requires the use of resources beyond the classroom. Additional copies of bibliographic forms and student questionnaires are available on request from Dr. Iris McIntyre, Co-ordinator of Curriculum Supervision.

I would appreciate it if you would assist me in collecting further information on those aspects of your research assignment that were directly related to library services and resources in the school and the community, by filling out the enclosed teacher questionnaire and returning it to Dr. McIntyre as soon as possible. Your replies to this questionnaire will be kept confidential as your name remains anonymous to the researcher.

Again, my sincere thanks for your co-operation.

Yours very truly,

B.A. Hall,
Librarian

DUCHESS PARK SECONDARY SCHOOL
SCHOOL DISTRICT NO. 57
PRINCE GEORGE, B.C.
Phone 564-1511
2371 ROSS CRESCENT PRINCE GEORGE BC PHONE 563 7124
Telex 047-8817

April 17, 1984

Dear Colleague:

Once again, I thank you for volunteering to assist me in my study on the patterns of grade ten student information seeking behaviour.

I have now extended the collection of materials to June 10, 1984. I would really appreciate it if you could manage to complete your class set of bibliographies and student questionnaires by this date.

If you should have any questions concerning your part in the study, please contact Dr. Mc Intyre as soon as possible.

Yours very truly,

B.A. Hall,
Librarian.